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Engineering knowledge and new railways in the second half of XIX century. Pietro Spurgazzi and his professional activity

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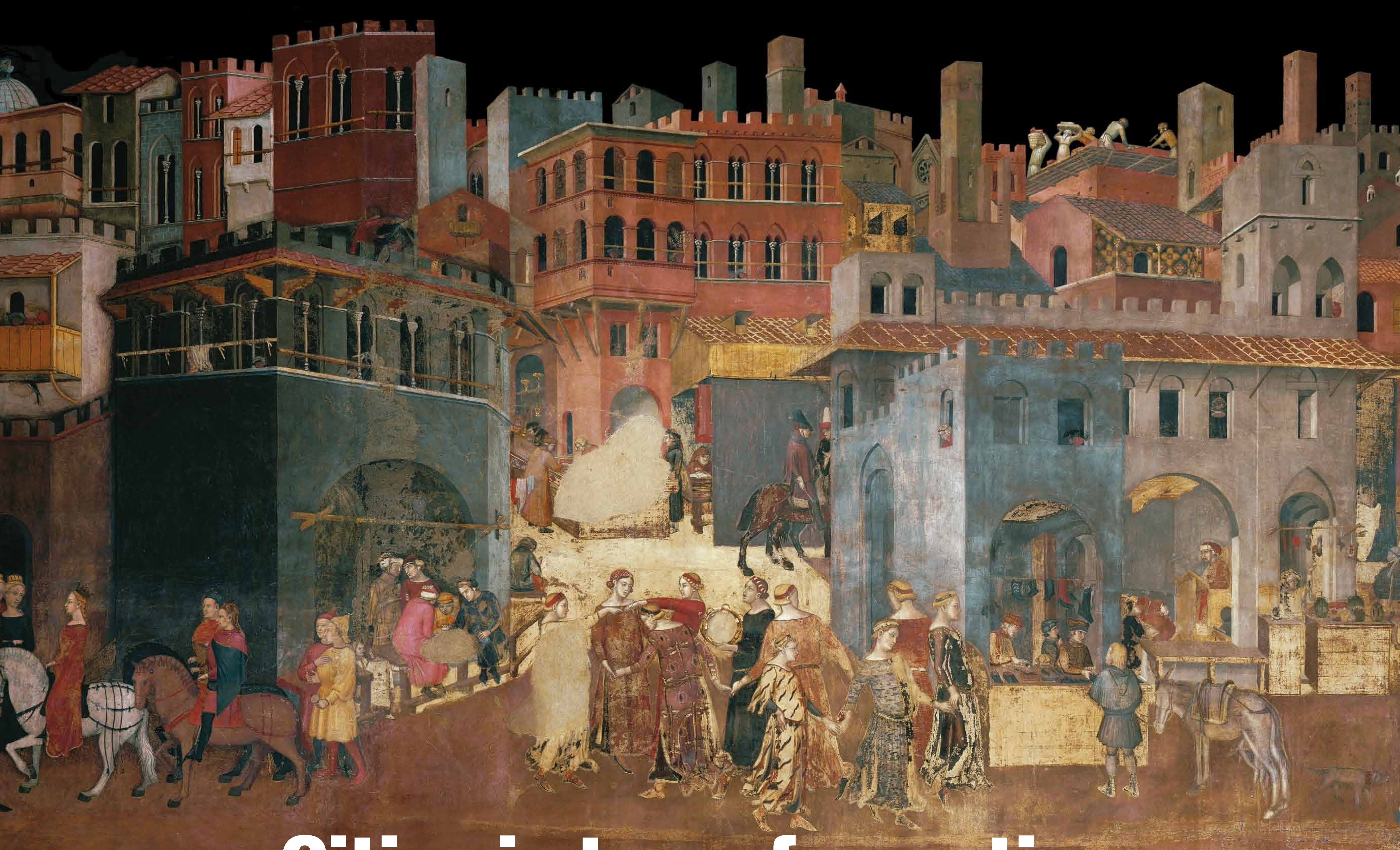
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Cities in transformation Research & Design

Ideas, Methods, Techniques,
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EAAE / ARCC

International Conference
on Architectural Research

Milano 7-10 June 2012

Posters



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EAAE, Leuven, 2012



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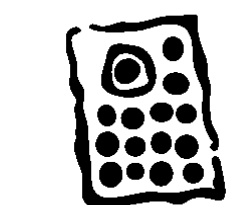
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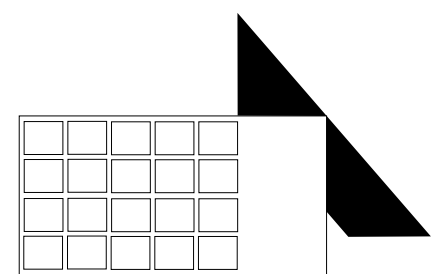
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Tema 1

Knowledge of the City for Urban Transformation



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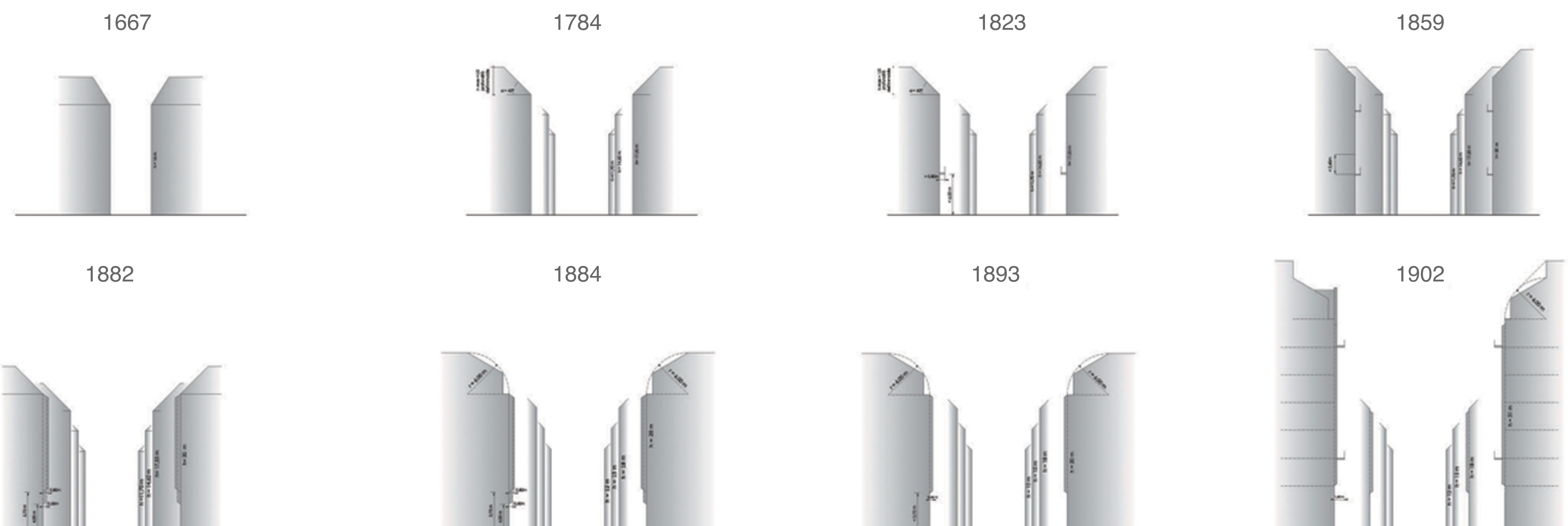
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Tema 1
Knowledge of the City
for Urban Transformation

Francesca Barone,
Politecnico di Bari, Italy

“THE STONE FACADE”: urban construction and tectonic metaphor.
FRANCESCA BARONE, PHD Student - Politecnico di Bari, Faculty of Architecture



Building Regulations on the road profile: relationship between the building organism and the city

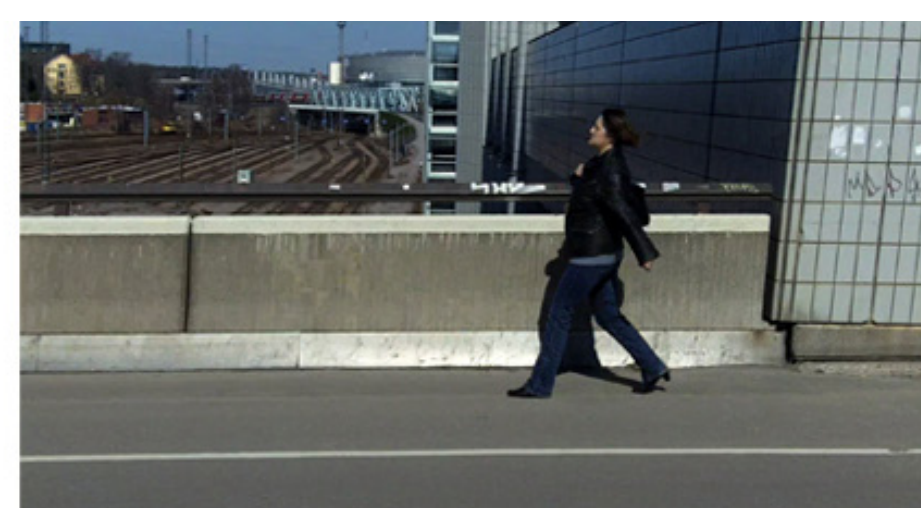
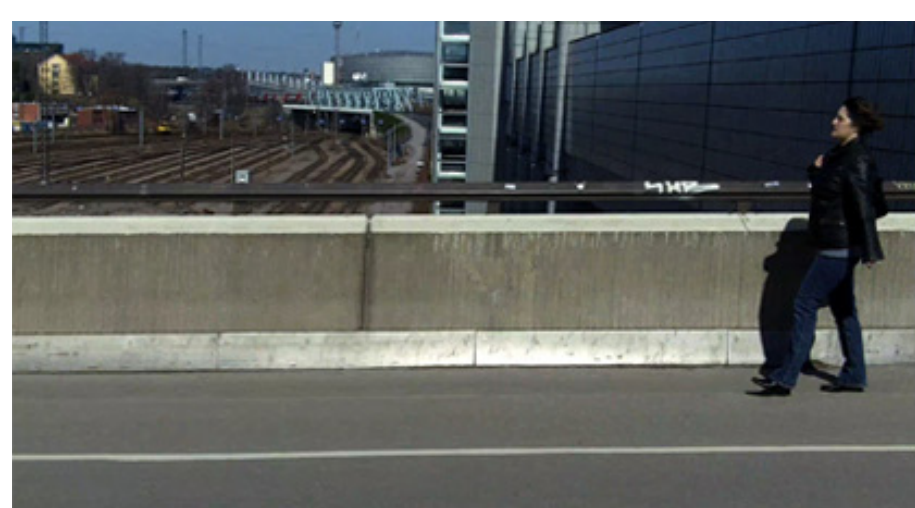


Typological evolution of the stone façade: relationship form - structure



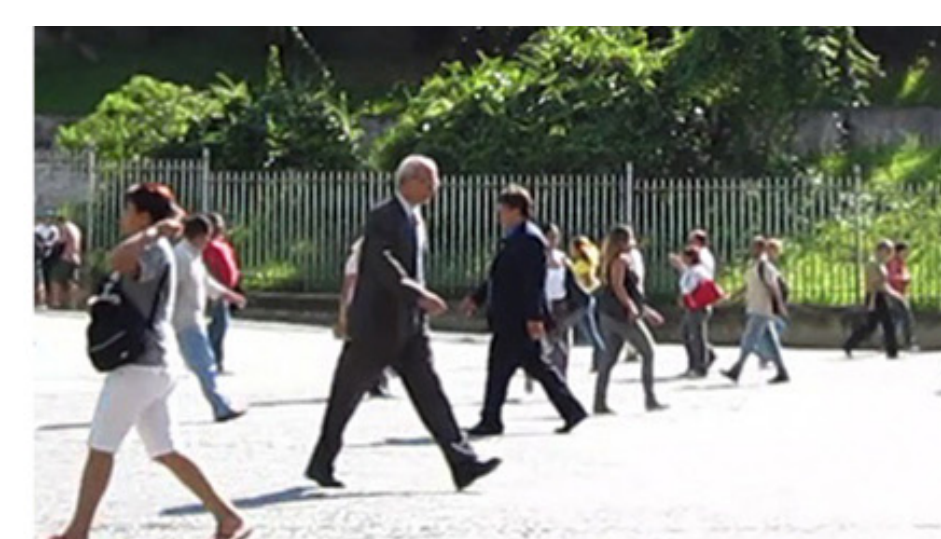
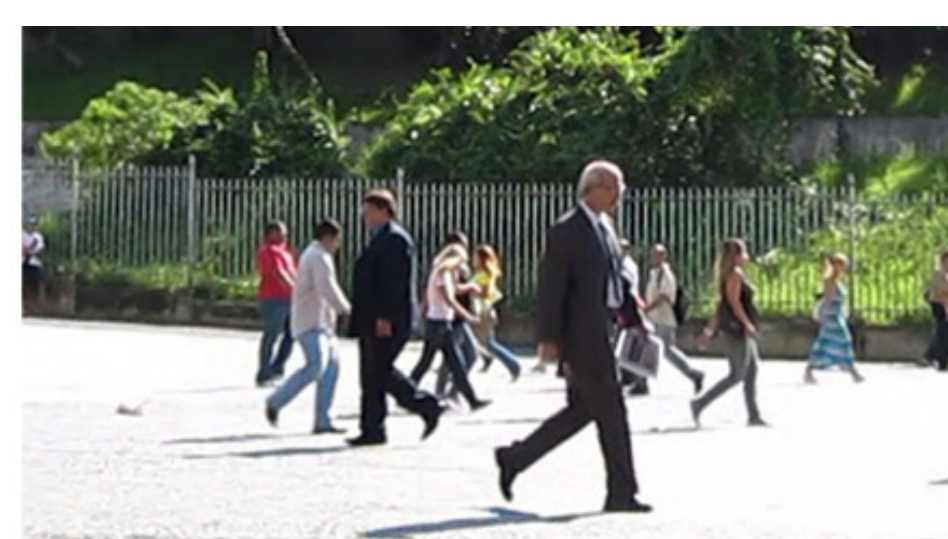
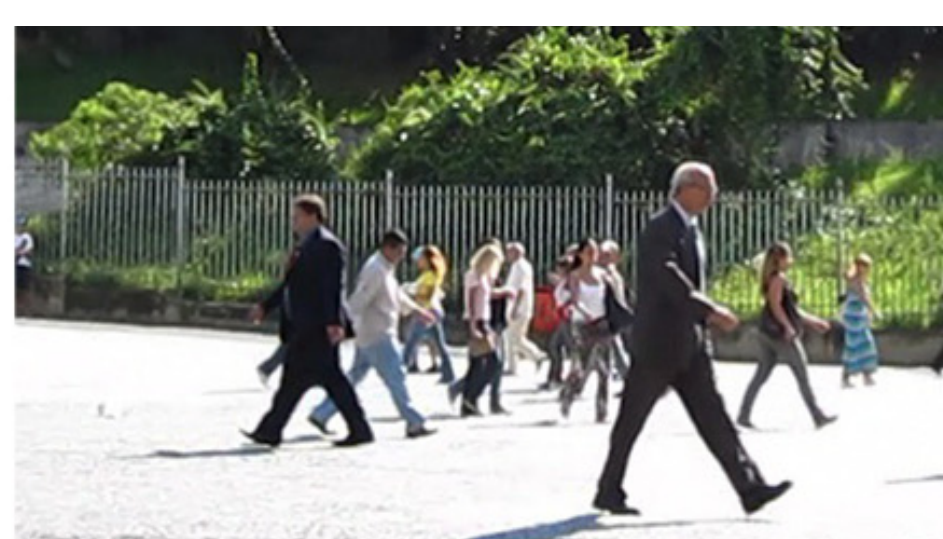
At the beginning of videographic approaches in urban research, video was first used as a tool for methodological apparatus. Allowing the recording on the same support of various observational data of urban ambiances, the audiovisual tool was used within the framework of the fieldwork and also to illustrate the research results.

The evolution of videographic practices in urban researches brings us to reconsider the role of video. Today, video does not only seem to be reduced to a tool or an illustration. Thus, the relationship between video and research can not be reduced solely to the use of one for another, but would develop as an interweaving of one inside the other. **By looking at different disciplinary postures, the question of the video is part of a reflection on the interweaving processes of knowledge and transformation.**



Videographic Approaches in Urban Research

By observing the works of different urban research actors (researchers, teachers or videographers), we propose a reflection at the crossroads of disciplines, through which we try to question the capacity of understanding, conception and representation of the urban ambiances from the video.



In an interdisciplinary dialogue, which took place in a seminar entitled «Video & Ambience» (25th and 26th of October 2011 at the Grenoble School of Higher Studies in Architecture, France) we convened three types of postures (linked to ethnography and urban sociology, to processes of urban planning, and to artistic and film production) which each feed the understanding of the place and role of videographic approaches in urban research.

It is also an opportunity to question the various forms of link between the videographic work and the production of knowledge for the city, at different moments of these practices: 1/the fieldwork, 2/the analysis, 3/the reproduction.

1/ the fieldwork

This phase refers to different choices and strategies of filming, postures and positions in space. Also, how to build a posture of capture by considering different movements and relationship to time knowing that it has an impact on the editing and the reproduction?

Filming is to find its place, fit into a space with his individual experience, in a relationship to another. The content and approach of the video are to think with regard to these points of view.

2/ the analysis

During the analysis, what meanings and what forms can take a sequence? What transformations of the raw footage can be used to analyze it? How can the editing influence and direct understanding of the object being studied?

We can enter at least three types of processes related to the moment of analysis: immersion in images, identification and selection of items. These processes are not organized sequentially but take shape in a double movement from the video material.

3/ the reproduction

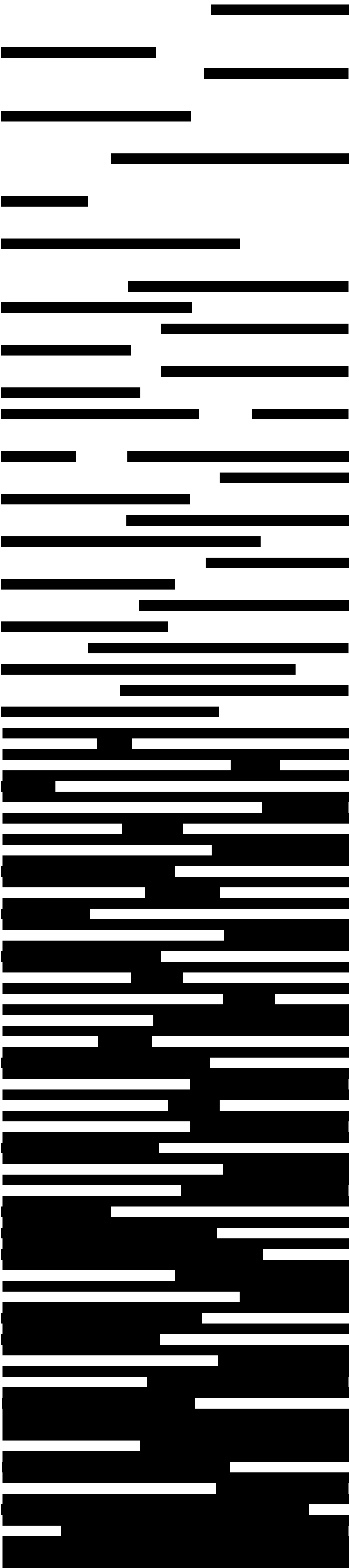
This phase is related to the question of language. It invites us to formulate a reflection on the possible forms of research results communication. In an operational perspective, how the use of video is it able to serve the urban design? To what forms of creativity, innovation and debate, video approaches can lead?

If certain videographic practices are not likely to go up the reproduction, others record this stage in the very process of forming a thought and a project. Reproduction raises the question of sharing a glance, a subjectivity, sometimes leading to new spaces, new narratives.



FIGURES AND STRATEGIES FOR THE CITY'S TRANSFORMATION

PAOLA BRACCHI. PHD SUDENT, POLITECNICO OF MILANO, DIAP



The city evolution is not a metamorphic flux, but it occur through the alternation between phases of stability and instability. The transition from one phase to another bring with it previous arrangement inside the new configuration, without any repetition. The contemporary cities seem forgot it and live always in the same moment, but they cannot be only present because their identity and essence are part of a process that is written in the soil, in the geography and in the urban archeology like a “dig in the cultural thickness of the built spaces, like a sediment of memories”. The soil is not a addition of different historical phases, but a complex stratification made by sedimentation and interaction between all the signs, the cuts and the passages of phase that remain impressed in the urban territories’ pages.

The proliferation of signs make difficult understand which are the ones that are part of city’s DNA, filter the signs through some fundamental figure is necessary first for untwist the tangle of signs and then reach the morphogenetic essence. The concept of sign has inside it space and time in unstable balance between the destructive aspect of the ruin and the projective aspect of the trace. Gedorg Simmel in his essay “De Ruine” says that the architecture is the only art in which is possible reach an equilibrium between “soul’s wills and natural wills”, the ruins seem to be a nature revenges, that push down the human wills of elevation. In the ruin the nature transform the architecture in material for a new form, so it can be used as an active principle, because is a structural part in the process of transformation.

Also the recognition of traces is fundamental in the understanding process of multiplicity of signs. If the richness of the cities come from their differences, so in the experimentation of contradiction as integration, we can say that what allow the interaction between the fragments is the trace, like a deep sign.

When we are called to make some intervention inside the city, both historical and contemporary, is important to read and interprets it with those figures, that are also closely related with the concept of memory. When urban and architectural projects are related with the built up spaces, those kind of reading of the urban text allowed us to think about strategies of transformation of the city. Strategies that can work trough addition, demolition or substitution of the existence. Thanks to the process of knowledge make before and during the project, that kind of actions are not destructive of the past and of the present, but transformative because linked to the city’s DNA chain.

The aim of the paper will be, starting from this reflections about the relation with the history, study in deep some strategies either through design experiences that from theoretical point of view.



Tema 1 Knowledge of the City for Urban Transformation

Maria Antonietta Crippa
Politecnico di Milano, Italy

The case of Italian mental hospitals: relationships between architectural design and urban development in the twentieth and twenty-first centuries

* Psychiatry, society and the Italian government, from the national Unification to the period between the two world wars, contributed to the construction of mental (or psychiatric) hospitals characterized by rigid separation and by functional architectures.

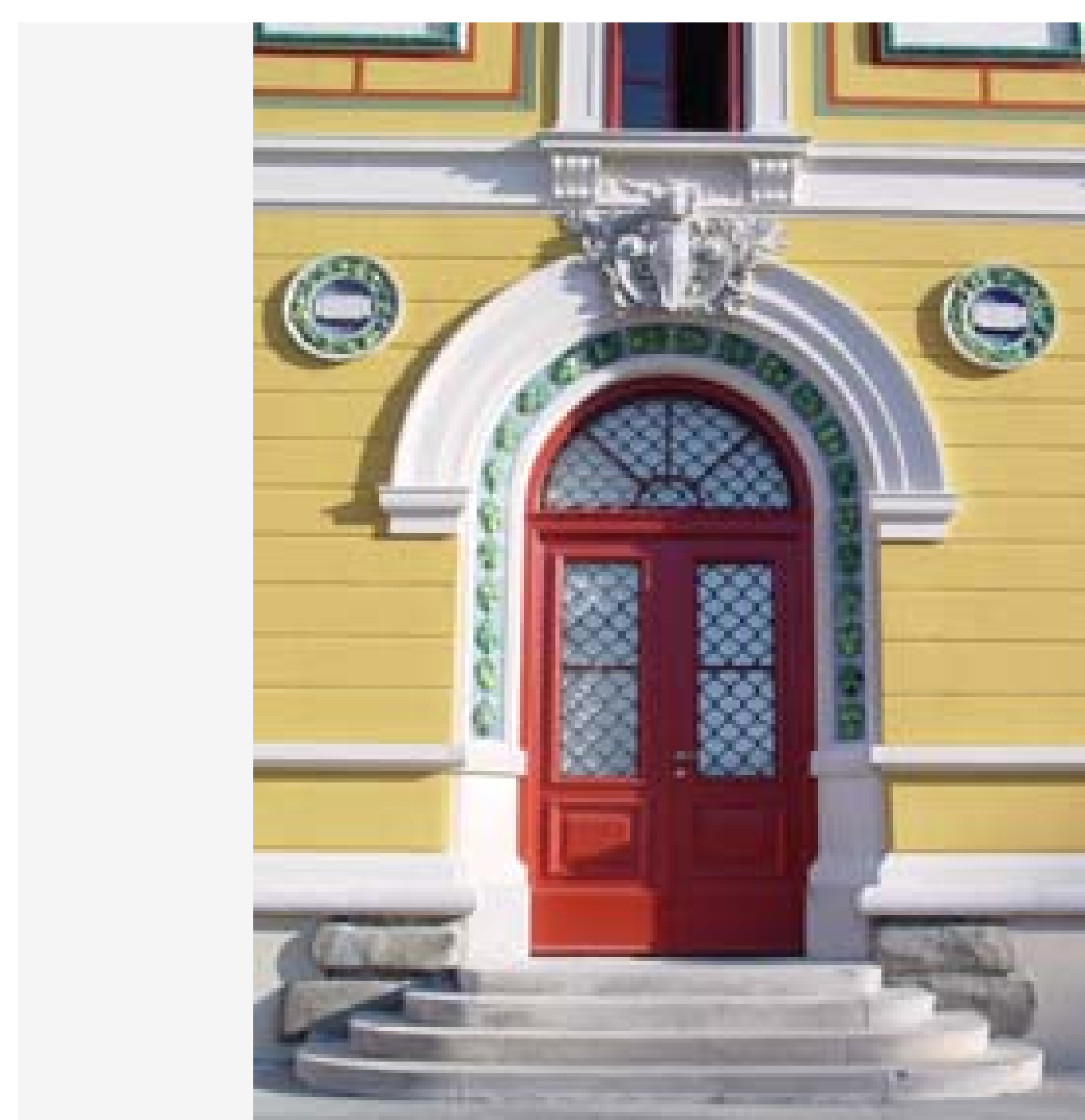
* In Italy in 1978 only, the laws n. 180, "Basaglia law", and n. 833 have resulted in the closure of psychiatric hospitals.. The national situation is reflected in the area of study on the North-East (Lombardy, Veneto, Trentino, Friuli-Venezia Giulia).



Ex psychiatric or mental hospital, Pergine (Trentino)

An initial survey identified: heterogeneous construction projects, some of which of urban significance (Gorizia), adaptations of existing features to new ones- health, schooling system, university - with significant changes

(Varedo-Mombello, Gorizia, Trieste); cession and fragmentation of areas (Bergamo, Trieste, Gorizia), cultural enhancements through museums (Trieste, Venice, Milan).



Ex psychiatric mental hospital; Trieste (Friuli, Venezia Giulia)

Important issues are the evaluation processes elapsed since 1978 to date, and the protection of buildings and the vast green areas, often keepers of tree species or micro ecosystems, all objects of the research here presented.

Maria Antonietta Crippa



Tema 1 Knowledge of the City for Urban Transformation

Noheir Elgendy
Politecnico di Milano, Italy

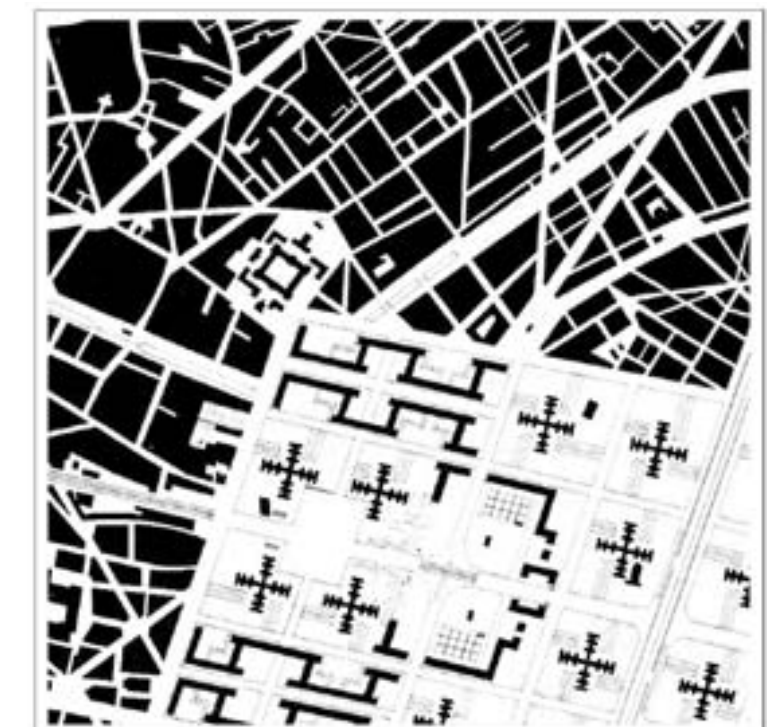
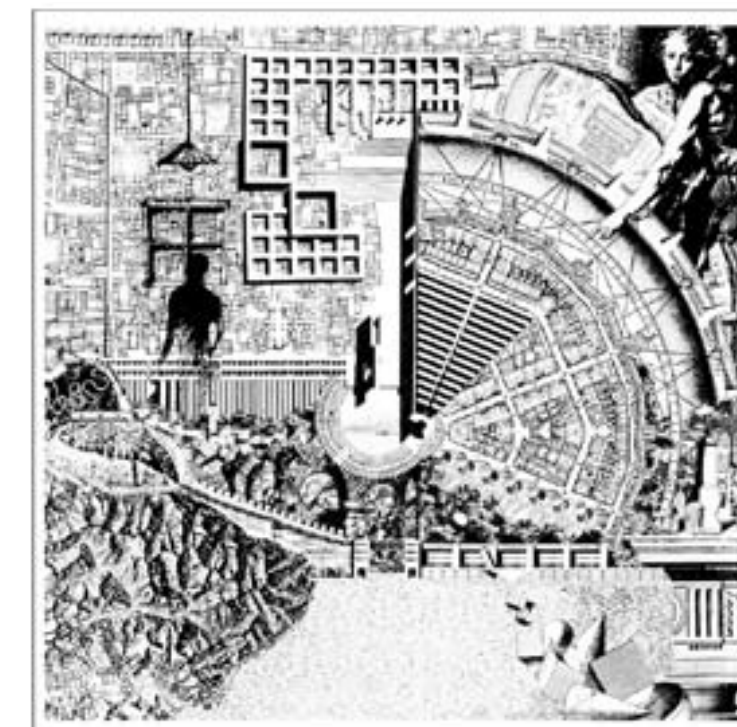
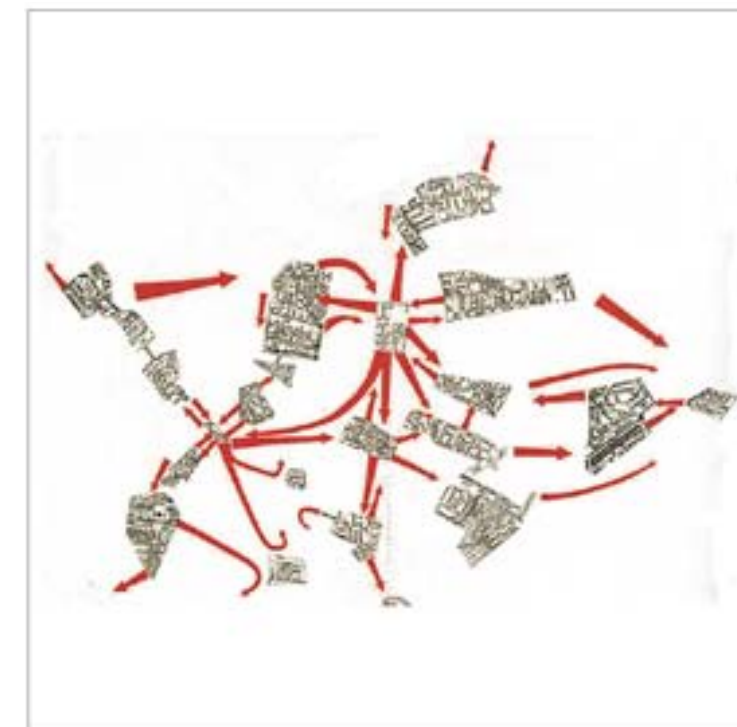
The Islands within the City | Tales of a Transition

Transformations in the form and structure of the city are not just about a scale jump: it is also about reversing codes in the city. The city fabric turned into a collective tissue of a diversity of mono-functional 'islands', and so strategies for the reconstitution of a civil architecture and a society that is both open and aware of the importance the ultimate 'shared' places - namely cities - needs to be rethought.

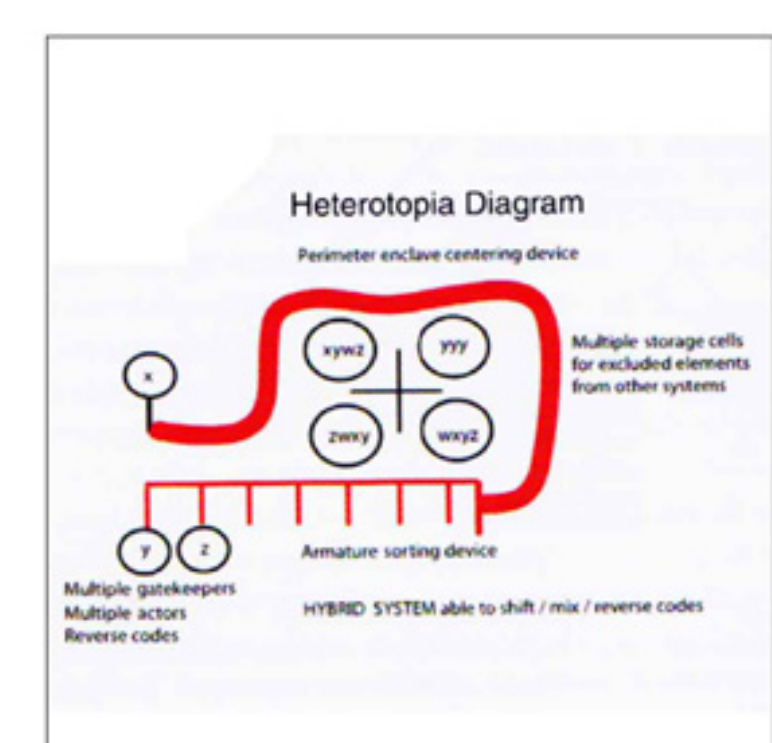
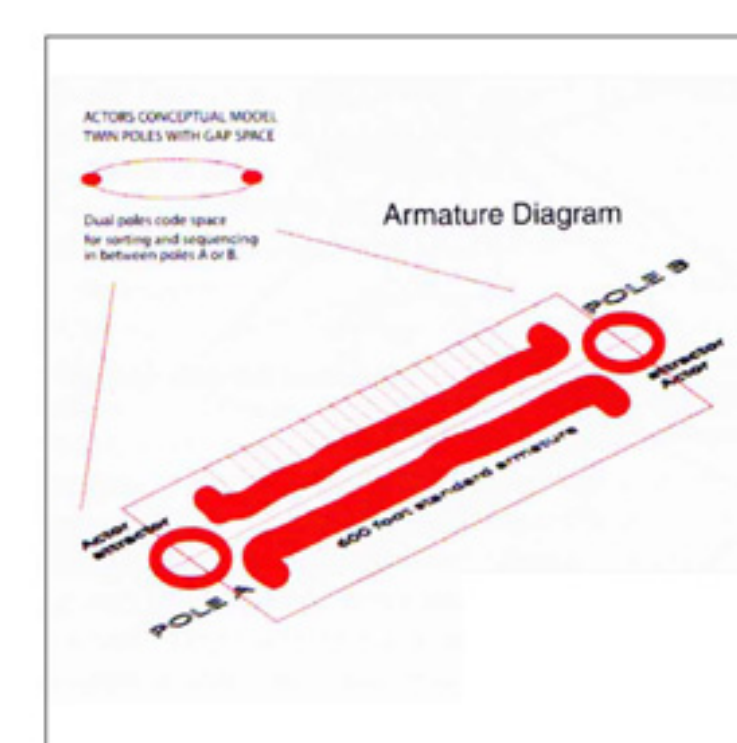
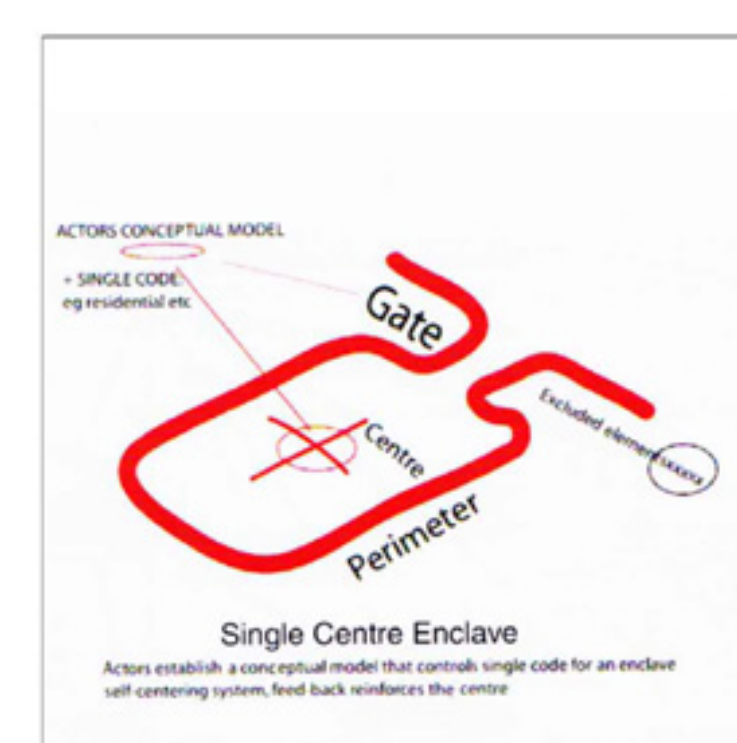
There are periods and epochs when the city stops working as a necessary counterpart to the aggregative pulses which push forward urban society. It stops being a necessary break from the over homogenous nature of ordinary urban space. In these periods these 'islands' begin to dominate. Their energy is freed up through numerous small activities, which dilute the value of human relationships and construct enclaves where there is no social or cultural variety. These 'islands' grow parallel to each other. Each one identifying its own borders and containing a certain life and nature. They do not merely emerge from the fact that too many similar kinds of lives are concentrated in spaces which are too similar, and where urban revolts explode, showing a total alienation from the urban condition. Their diverse typomorphological characteristics reflect economical, social, and cultural isolation. They house communities of homogenous race and ethnic backgrounds holding their traditions and performing them within a contemporary urban environment, forming a city within the city.

The 'island' is a source of deep energy and is apparently peaceful, and it does not oppose itself to the cities where we live. It tends, on the other hand, to erode it from within. Without making radical gestures, it moves quietly and often invisibly within the mechanisms of reproduction of contemporary urban space. It breaks down connections, and unties knots; it compromises the very workings of the city. Yet, paradoxically, the 'island' remains an essential part of the creation of the city. It cannot stop feeding off those energies which are pushing towards the coming together of spaces and social groups in order to fragment and weaken them. Those energies which bring people together create links between them, connect up identities and favour the sharing of experiences and daily practices. We need to understand those 'island' in all their forms, and recognise these forms with clarity, while avoiding the temptation to see them not as part of our own lives.

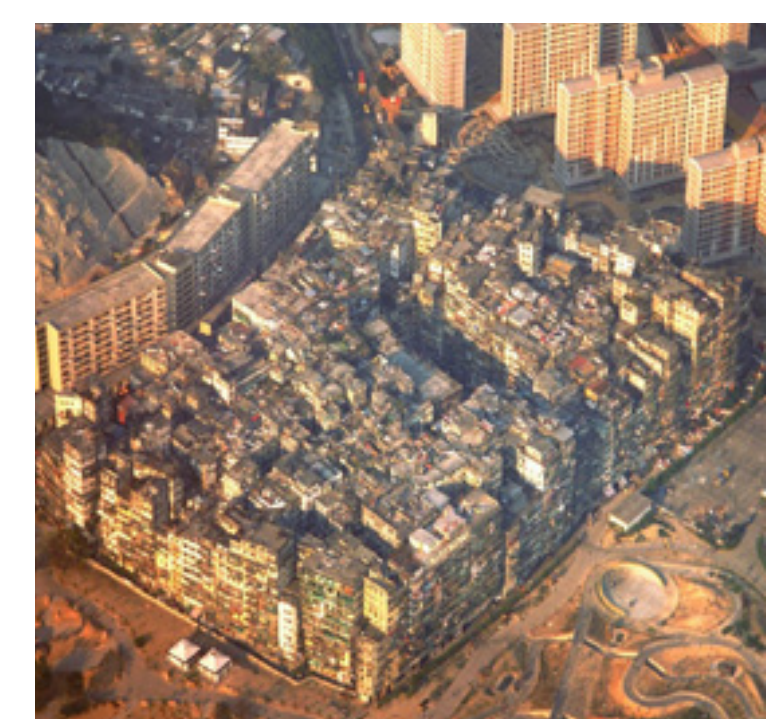
Topos | Logos _ The "Island" as a concept is a metaphorical shape, that signifies an entity holding a certain typological, morphological, cultural or social enclave within the city fabric, identifying its own borders and independent.



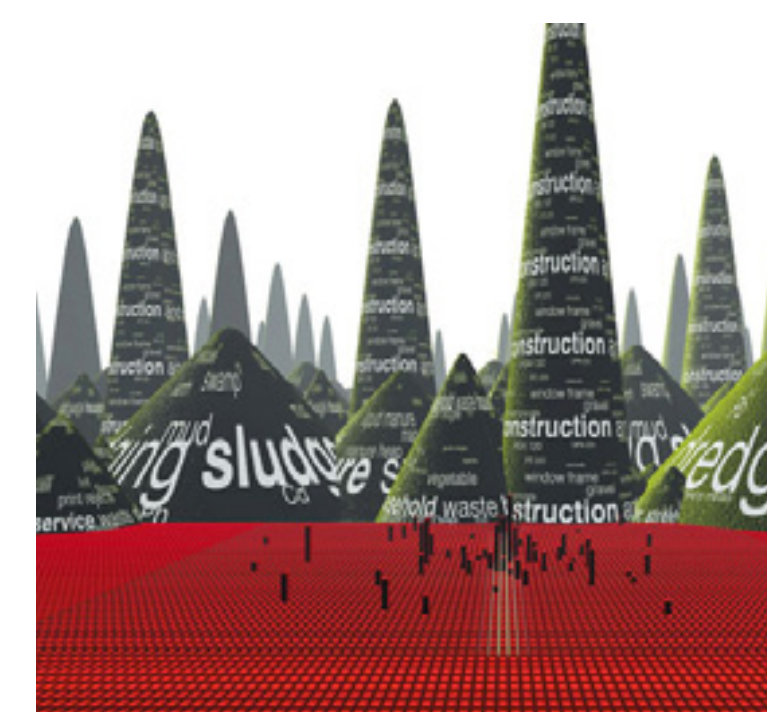
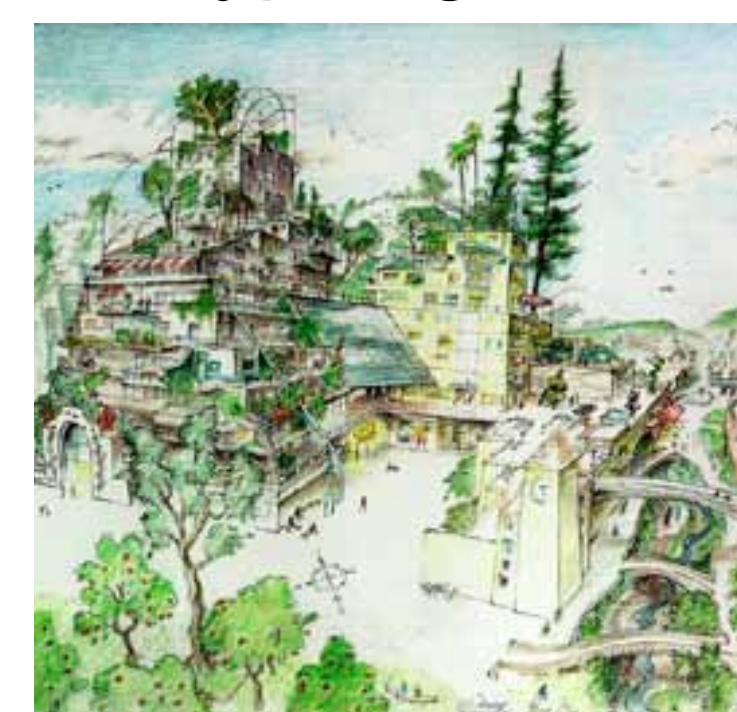
Enclave|Heterotopia _ The city form was transformed due to the sedimentations of historical layers form a collection of enclaves and armatures, to include a sort of heterotopia.



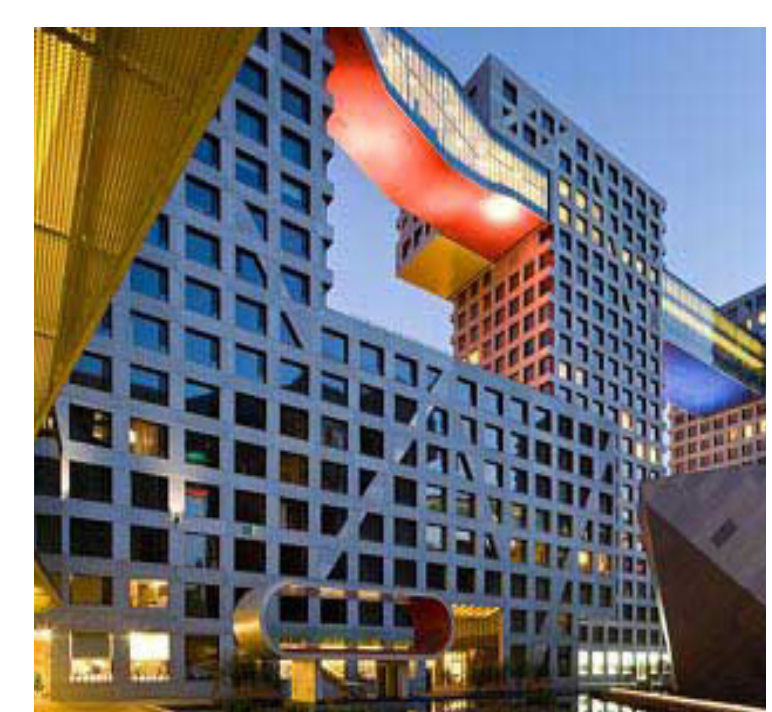
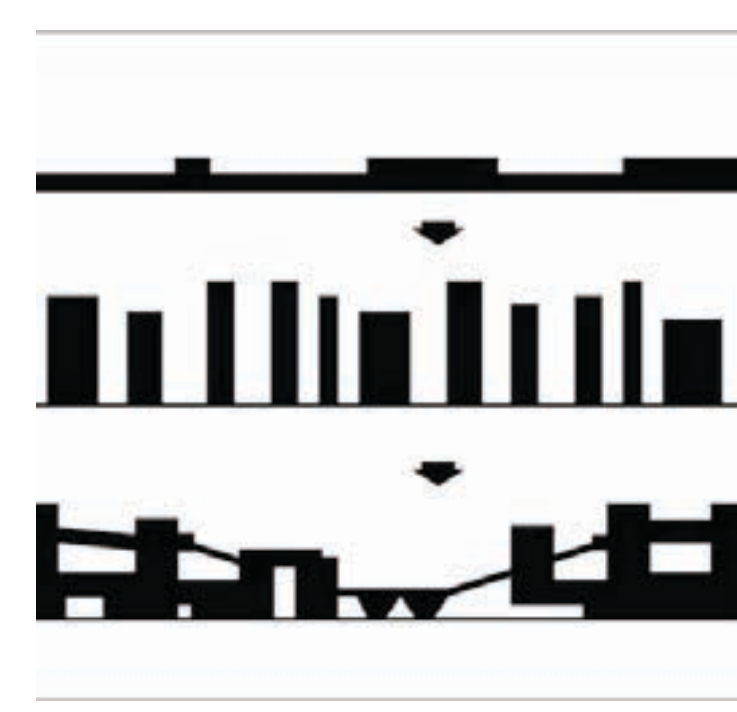
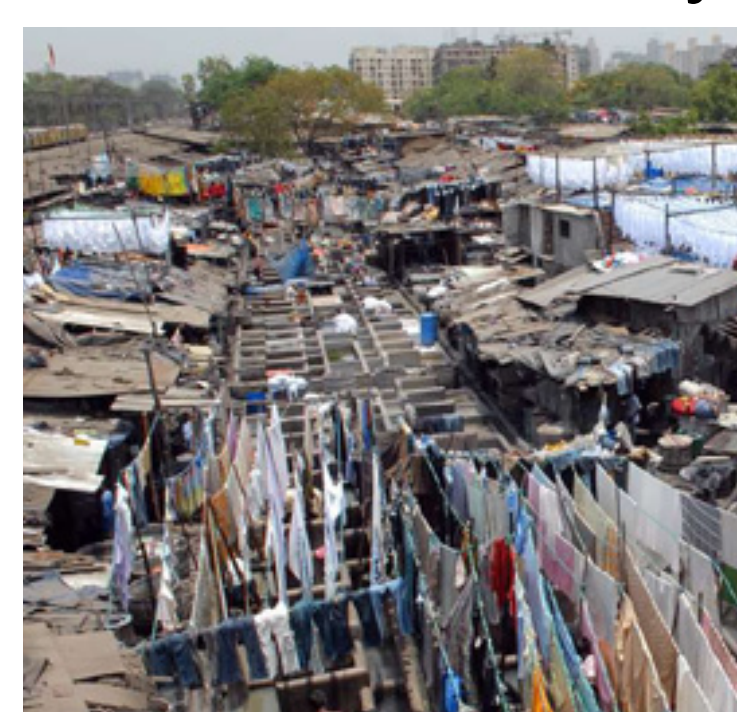
Formation | Transformation _ The 'Island' is a form of a Heterotopia, a metaphorical as well as physical enclosed and bordered typomorphological entity



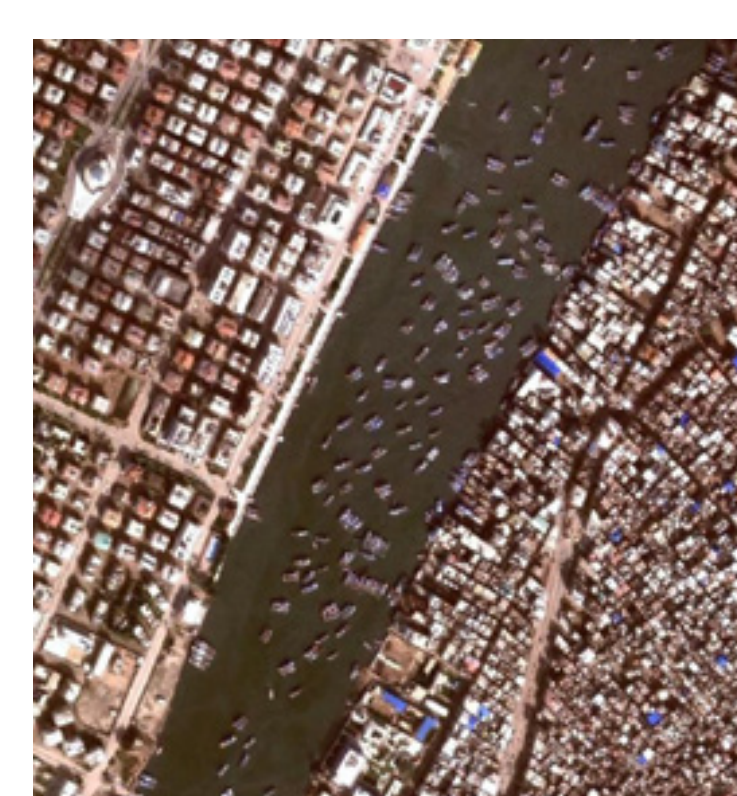
Metacity| Megacity _ The modes of transformation of the territory has resulted in deeper understanding the city and the formation of various typologies islands.



Formal | Informal _ The island a sort of a hybrid heterotopia including different functions and forming a separate social and cultural entity.



Natural |Artificial _ The Island spontaneous formation has developed a spontaneous relation between natural and artificial forming a new model for Landscape Urbanism.

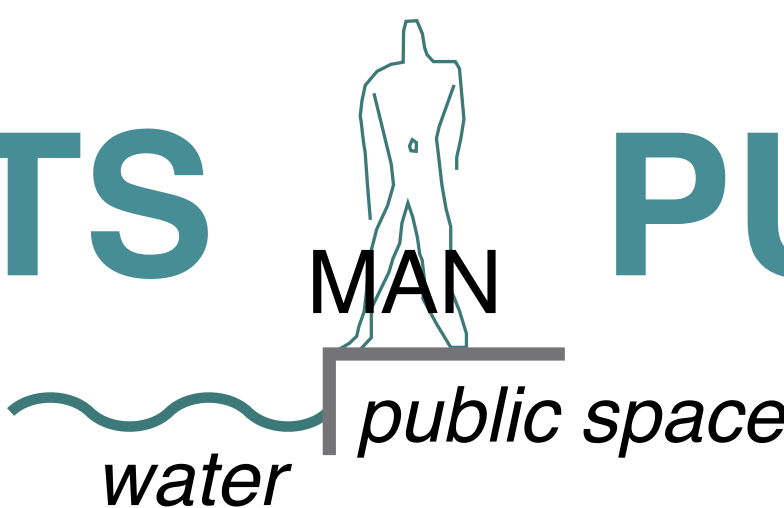




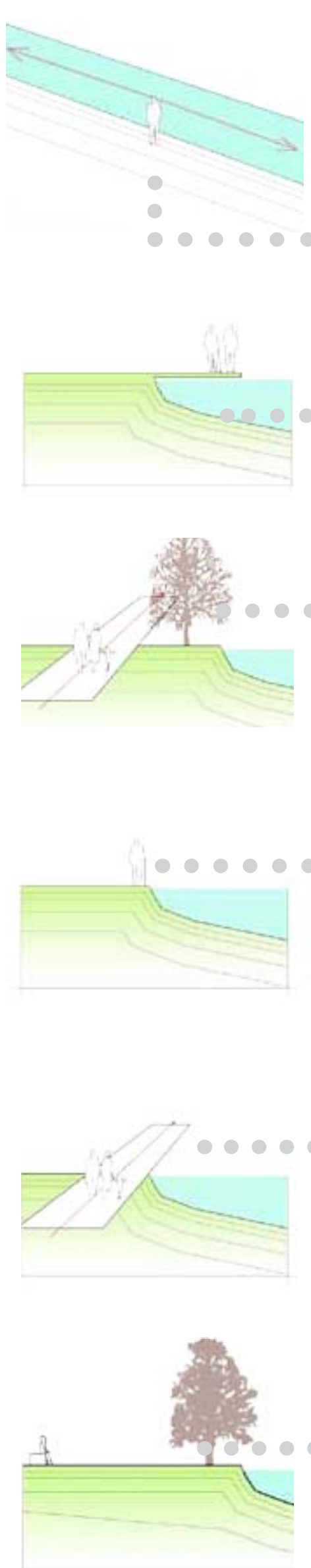
Tema 1 Knowledge of the City for Urban Transformation

Caterina Gallizioli
Politecnico di Milano, Italy

WATER MEETS PUBLIC SPACE



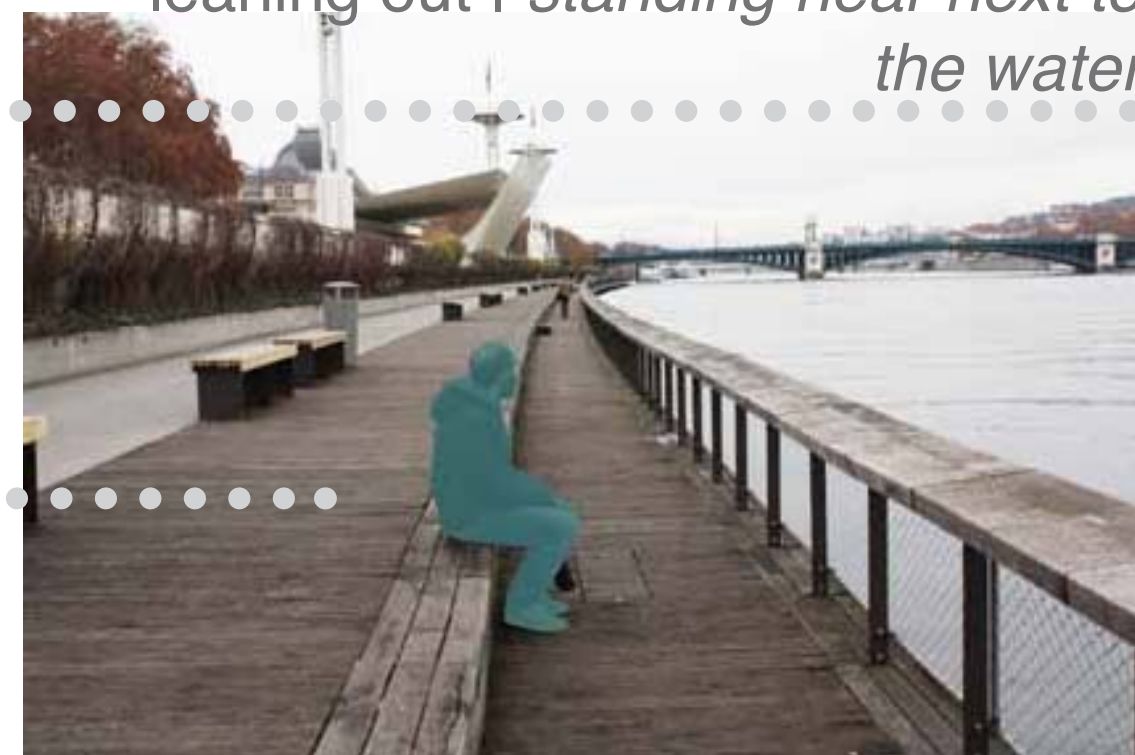
The urban and industrial growth process, bound to the development of cities until now, hasn't spared open urban spaces, sometimes modifying their structure, but at the same time generating new chances of relation between public space and water. **Rivers, creeks and canals** -as well as lake and seas, even though in different ways- have always been a characterizing feature of landscapes and, over time, also of the urban context. Through the **architectural project** water's presence is given back to the city enriched with new meanings more suited to answer modern needs and lifestyles. The project is a translator of the complex experience between man and water.



looking thought-towards
the water



leaning out | standing near next to
the water



walking by | near next to
the water



reaching out | moving towards
the water



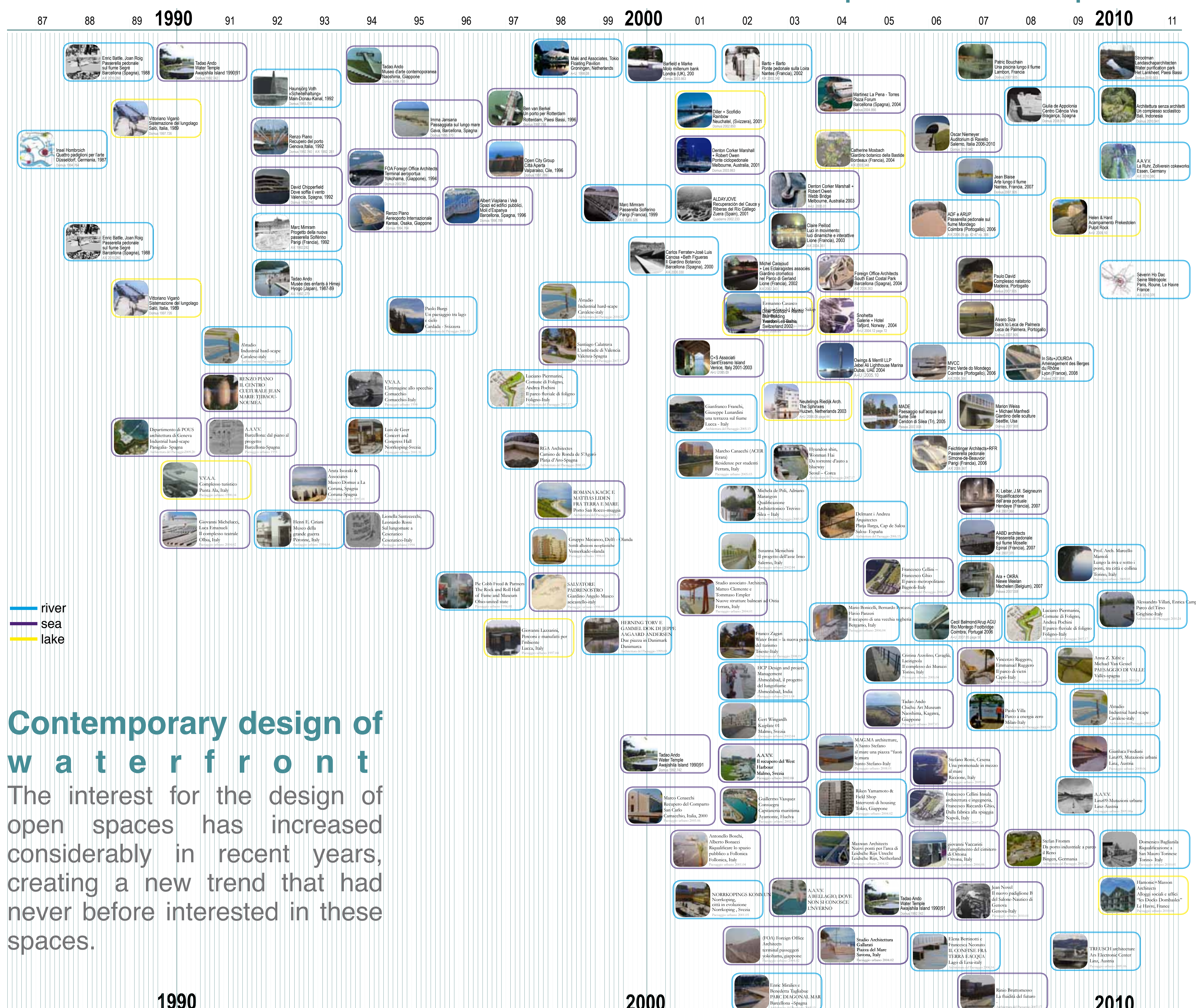
walking by | far next to
the water



leaning out | standing far next to
the water



man as interpreter of the relationship water public space



Contemporary design of water front

The interest for the design of open spaces has increased considerably in recent years, creating a new trend that had never before interested in these spaces.



Tema 1 Knowledge of the City for Urban Transformation

Ilaria Giuliani
Politecnico di Milano, Italy

Cultural industries and brownfields.

ZONA TORTONA e VENTURA LAMBRATE

Urban transformation processes between physical renovation and territorial identity creation

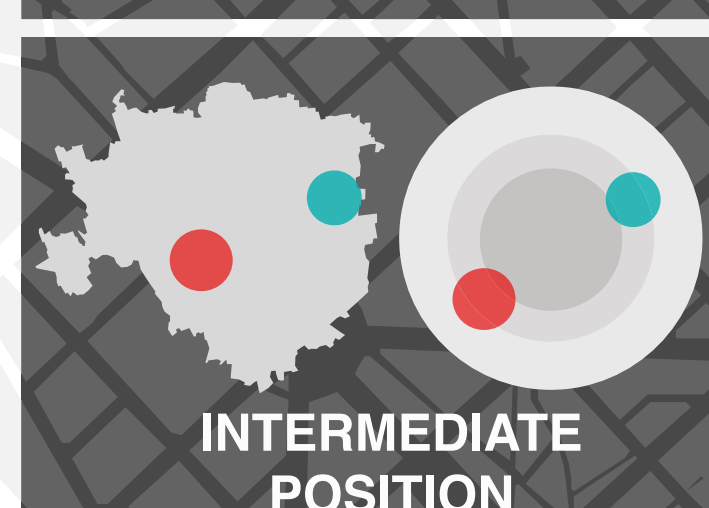


FUNCTIONS WITHIN CULTURAL
AND CREATIVE CITY



AVAILABILITY OF ABANDONED
INDUSTRIAL BUILDINGS

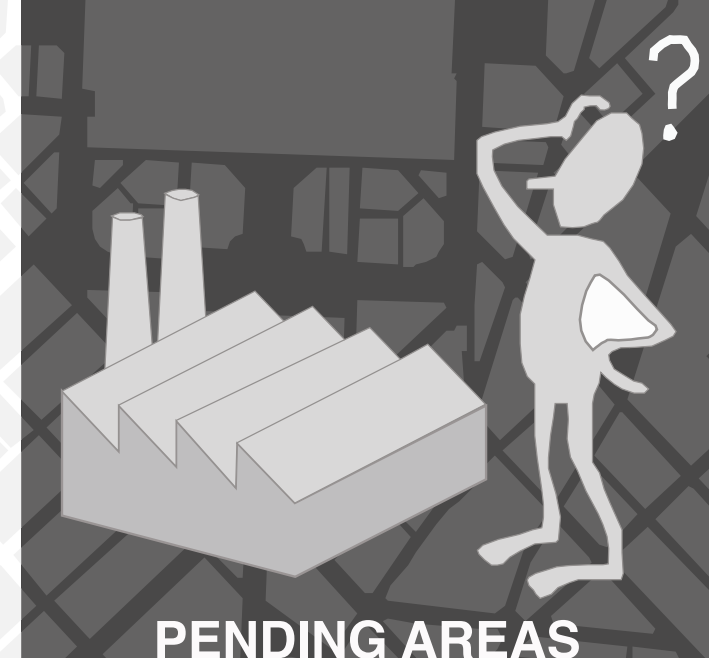
The new configurations of the space within the Contemporary City emerge as **interactions between the past and the present**, what resists to the new processes and what appears as shaped by them. These two areas of Milan are involved by the relation between urban space with the presence of brownfield sites and the agglomeration of economic activities tied to creativity and cultural production.



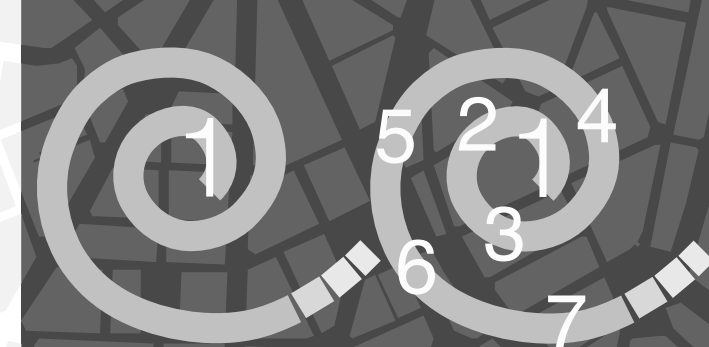
INTERMEDIATE
POSITION



FUNCTIONAL MIXITÉ



PENDING AREAS



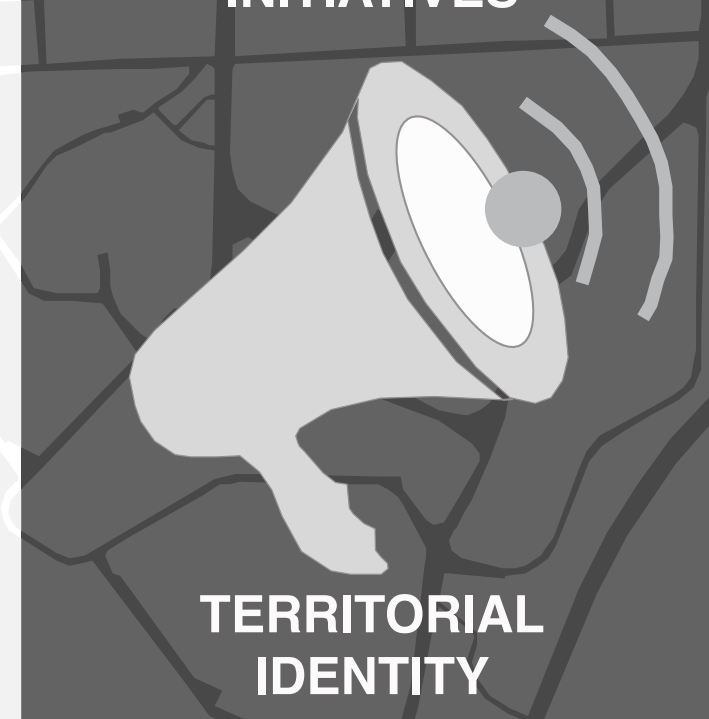
PIVOTAL INTERVENTION
SPONTANEOUS
PROLIFERATION



GOING ON
TRANSFORMATIONS



EVENTS AND
INITIATIVES



TERRITORIAL
IDENTITY

Located in a **strategic position within Milan**, these neighbourhoods benefit both of the advantages deriving from the proximity to the city centre, and of a good accessibility of being in the first periphery. Traditionally they used to be **historical industrial areas**, thanks to the presence of the Navigli in Tortona area and of the river Lambro in Lambrate area, and later to the railway networks. They presented a functional mixité containing traditional forms of housing mixed with the industrial settlements in a heterogeneous composition. These specific morphologies, histories, and geographical characteristics partially determined the paths of the urban developments.

Since the '60s, the two areas have been through a **massive post industrial decay**, when most factories were dismantled to be moved farther from the expanding city centre. Afterwards they have undergone two decades of urban blight and socio-economic depression with vacant factories, whose values went down leading to a relative low price of properties and to an immediate availability to be restored. These new spatial and economic configurations transformed the neighbourhoods in **fragmented areas**, without any precise vocations.

Instead of introducing large-scale redevelopment projects, the rebirths started in 1983 with the settlement of Superstudio in Via Tortona promoted by two photographers, and in the 2003 with the Via Ventura complex by a private entrepreneur. These **pioneer interventions** triggered **spontaneous incremental processes of regeneration**. Gradually old buildings get renovated one after another. Thus the risk in investing in such kind of properties have been reduced, encouraging other professionals of the creative class to buy industrial buildings to start their activities there. The **creative atmosphere** infiltrated into the areas, and soon some professionals moved there within new residential complexes and some others renovating old houses by themselves. These expansions added new values to the existing residential buildings and transformed the status of the devastated industrial communities, maintaining the traditional functional mixité.

The new identities have been enhanced by a phenomenon of territorial branding. Gradually they have been selected as alternative locations for the unofficial section of the International Furniture Fair, the **Fuori Salone**. During that week, all the streets adjacent to Tortona and Ventura streets are filled with endless initiatives, and every industrial space is temporarily occupied by showrooms, galleries, and fashion and design exhibitions. Along with the consolidation path of the event and the progressive renovation of spaces, two **territorial brands** have been created, Zona Tortona (recently changed in Tortona Design Week) and Ventura Lambrate (exported as Ventura Projects in Berlin and in Belgium), involving many associations, agencies and sponsors. These processes prove a new way of regenerating existing urban fabric, alternative to the large-scale development model typical of some portions of Milan, with a **gradual process of preserving as well as improving** the traditional neighbourhoods communities, imagining new functions for these territories.

Giuliani I. (2010): *Dismissione industriale e città creativa. Due processi di trasformazione urbana tra riqualificazione fisica e strategie di promozione del territorio: i casi di Zona Tortona e Ventura Lambrate a Milano.*



Heterogeneous Paces in Urban Transformation...

The city form is never static and predetermined, city is a living entity; a reproductive and growing organism that generates new divisions, and develops character which is depended upon what it has been generated from and what it is destined to become. It continuously mutates and adapts to the new situations caused by their global and local context, transform over time and experience growth and decline but never stop changing. The transformation of the city occurs through the alteration of its physical form plus non-physical structure (economic, social, political and technological) which both together shape the city form. Therefore this transformation not just has impact on the spatial aspect of the city, but also the way which citizen experience and live it simultaneously. Needless to say this justify why the cities transformation and its consequences are always considered as a focal point in the urban studies and literature.

Since the transformation is a gradual and incremental process and needs it's time to be formed; the speed and the pace of this change process in city's physical form is a significant issue which provokes different consequent effects in the prospect of the city. The time factor in urban transformation and the different paces in alteration of its components (context and constituents), minor changes and radical ones respect to the time, impact on the outcome of each urban development and its success or failure. Heterogeneous speed in alteration of city's components will end up by some problematic issues such as obsolescence or an illegible urban fabric that has lost its memorable image. Accordingly, consideration of the homogeneous paces in the process of the urban change will become more critical, and this is the main concern that brings up this investigation.





ARCHITECTURAL, CULTURAL AND INSTITUTIONAL POTENTIAL IN TRANSFORMATION OF SEYITGAZI

Prof. Dr. Ruşen Yamaçlı, Assoc. Prof. Dr. Leyla Y. Tokman,
Assis. Prof. Dr. Yüksel Demir, Res. Ass. Inci Güldoğan, Res. Ass. Elif Tatar

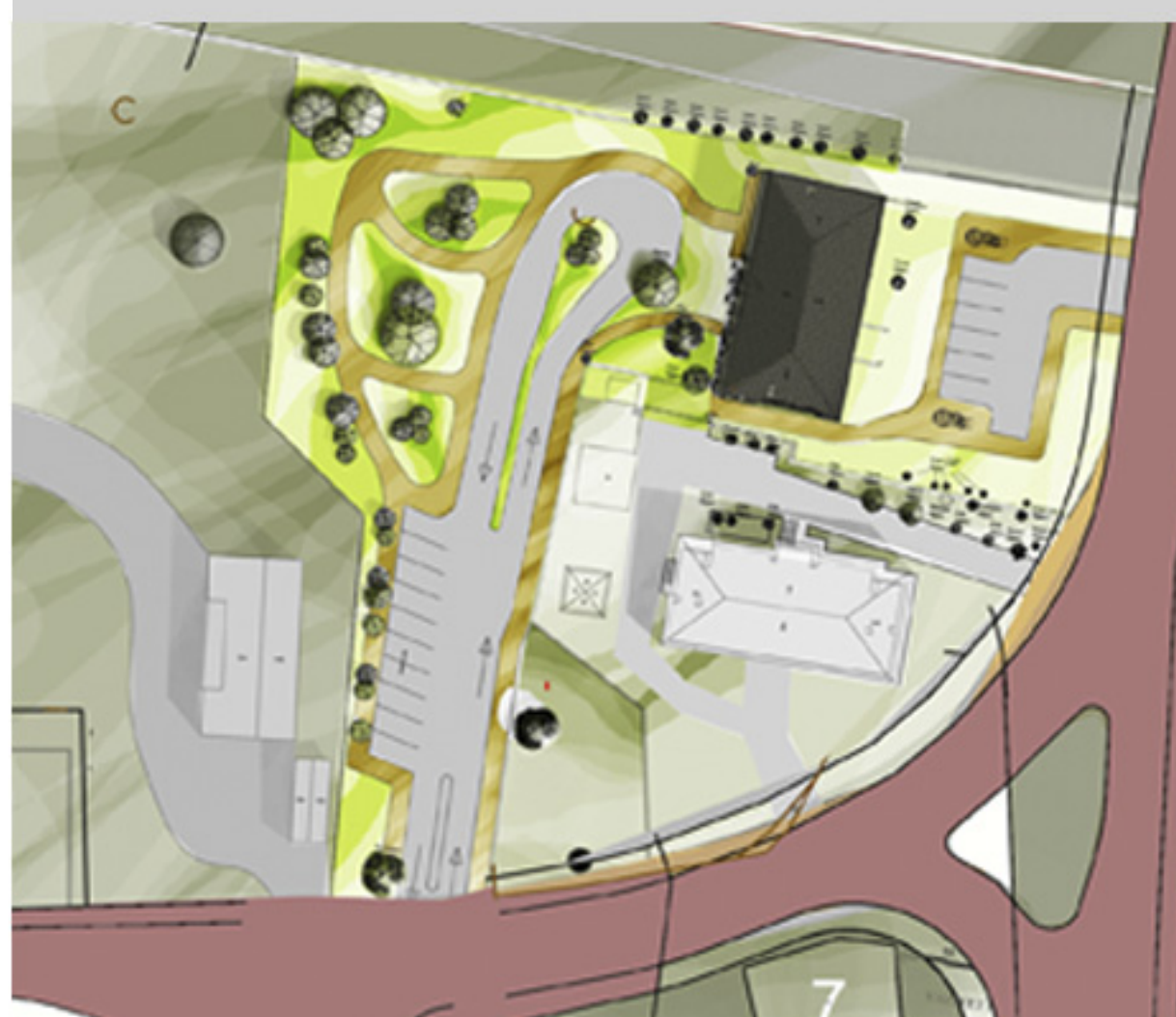
Anadolu University, Faculty of Engineering and Architecture, Department of Architecture
e-mail: ryamacli@anadolu.edu.tr, tokmanly@gmail.com, yukseldemir@gmail.com,
iguler@anadolu.edu.tr, elifguclu@gmail.com

Seyitgazi is a historic district of Eskişehir City in Turkey and it was named after the Seyit Battal Gazi Complex, the most important historic building complex in the area. The town settlement has been existing since 1200 B.C. the period of the Phrygians and many civilizations lived there.

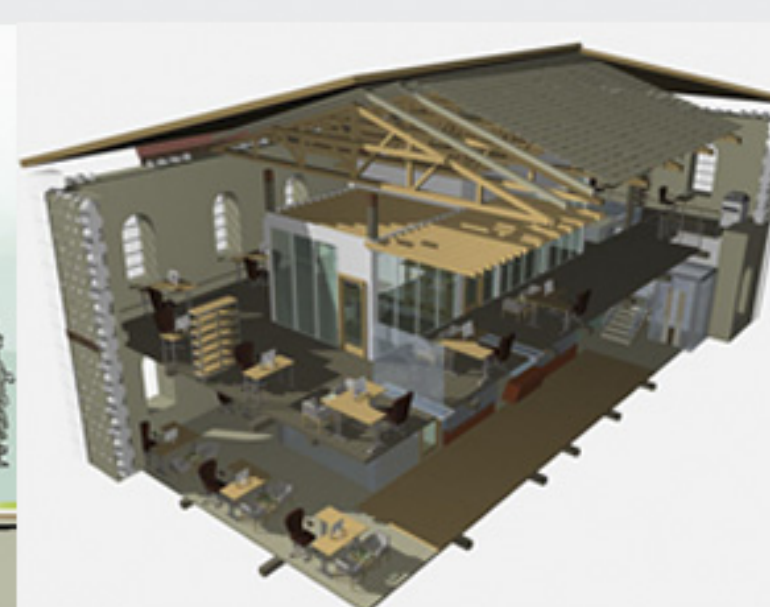
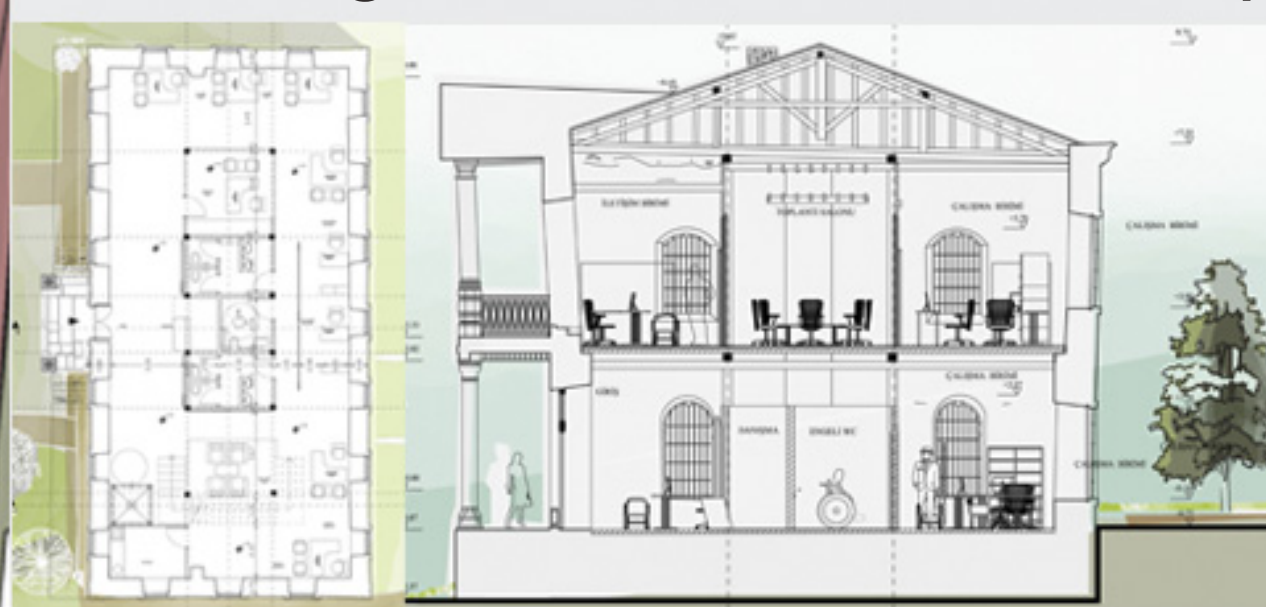
Problems related with urban transformation, renewal and revitalization of Seyitgazi County have been studied in Architectural Design Studio VIII course in Department of Architecture of Anadolu University since 2010. In the scope of the study, students transformed very valuable existing building stock like Old Military Building, Prison House, Selcuk Bath, Monopoly Building and Seyit Battal Gazi Building Complex with new functions and evaluated the area in the view of renovation of the life in the region.



Transformation of Old Military Building into Tourism Information Center _Project: Ismail Kanber



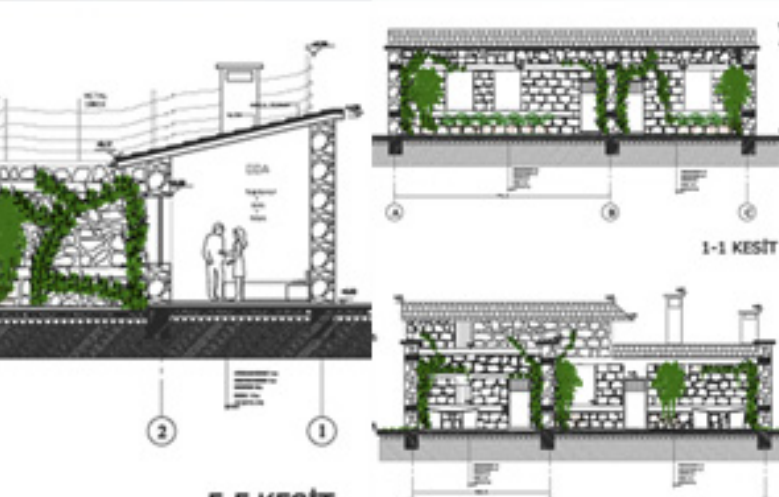
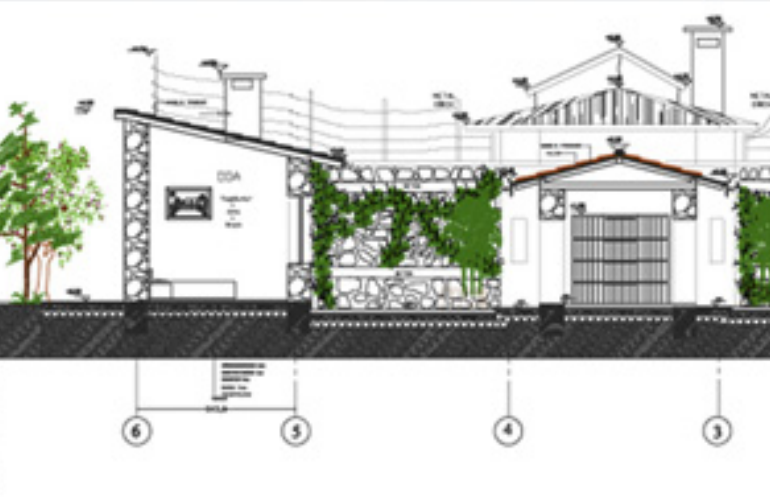
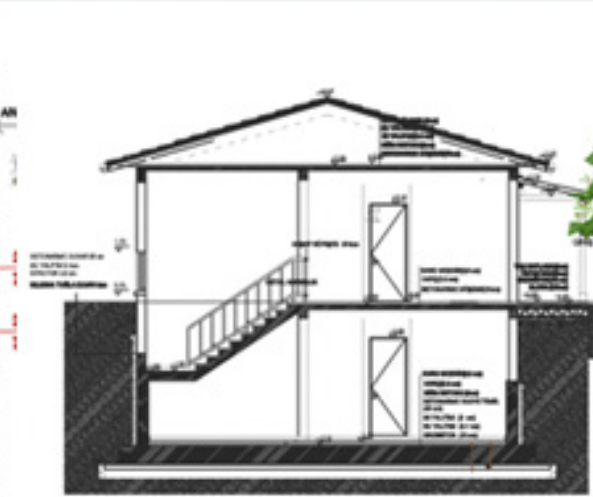
Student transformed Old Military Building, which was out of use and also damaged, into Tourism Information Center, where the identity of Seyitgazi will be introduced. He conserved the wall fabric of the structure and integrated offices, head department and meeting room to building.



Transformation of Old Prison House into Accomodation House _Project: Ezgi Kalfe



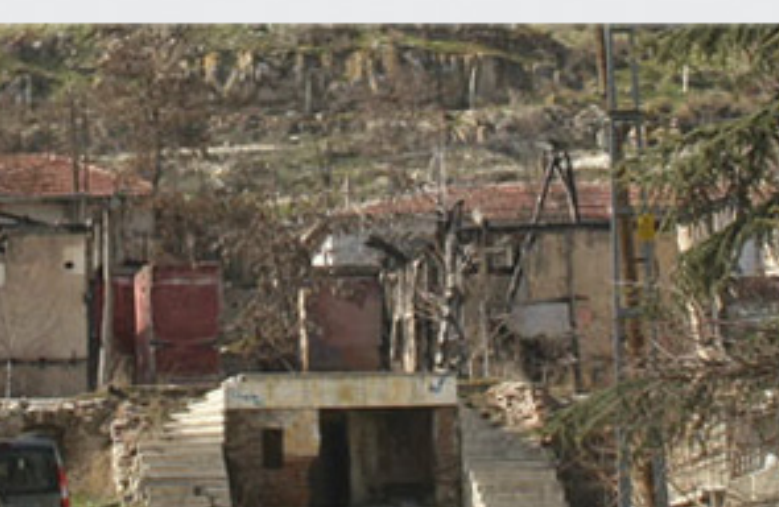
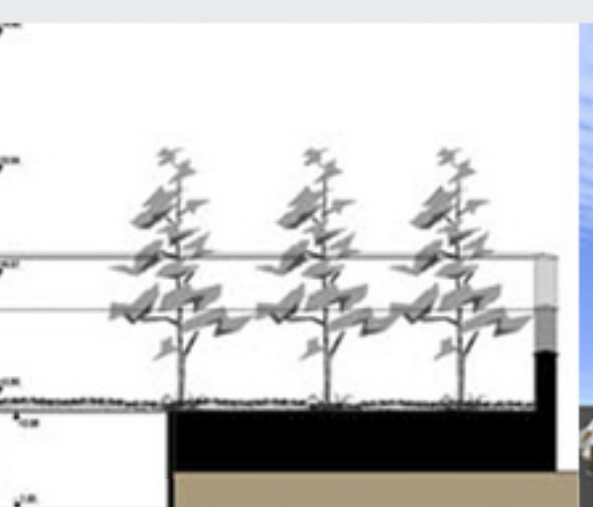
Student proposed the transformation of Old Prison House into Accomodation House for visitors. The wards were transformed to bed rooms. Administative building kept its own function. The project were enriched by landscape elements. Ecological solutions like solar cells were used in roof, the building will be able to produce its own energy.



Transformation of Old Monopoly House into Butic Hotel _Project: Durak Arıkan



Student presented an idea about transformation of damaged Old Monopoly House into Butic Hotel. He proposed a new laminated timber structural system for restoration of the building. A public cafe was designed in the basement floor, so not only visitors, but also the citiziens can use a building.





Tema 1
Knowledge of the City
for Urban Transformation

Fatema Meher Khan
Bangladesh University of Engineering and Technology
Bangladesh

Transformation and growth of Shophouses in connection with changing spatial dynamics of Old Dhaka

Fatema Meher Khan **Dr. Farida Nilufar**
Lecturer, Dept. of Architecture, BUET. Professor, Dept. of Architecture, BUET.

Shophouses were an important aspect of old Dhaka's economic life since its development. Initially its location was limited to the pre-Mughal Hindu core of the city which was eventually flourished in other localities (Fig 1 - Fig 3) .By the end of 20th century entire old Dhaka was identified as mixed residential area. Therefore the morphological transformations in old Dhaka require investigation into the spatial dynamics of the city in relation to the growth of shophouses.

The traditional shophouses have also experienced morphological changes in terms of their extent and spatial organization. Fig 5 and 7 show that in new development the number of shops have increased and shops have penetrated deep into the building, away from street. Hence direct relationship of shops with the street in earlier period has changed which influenced the spatial properties of streets in local areas.

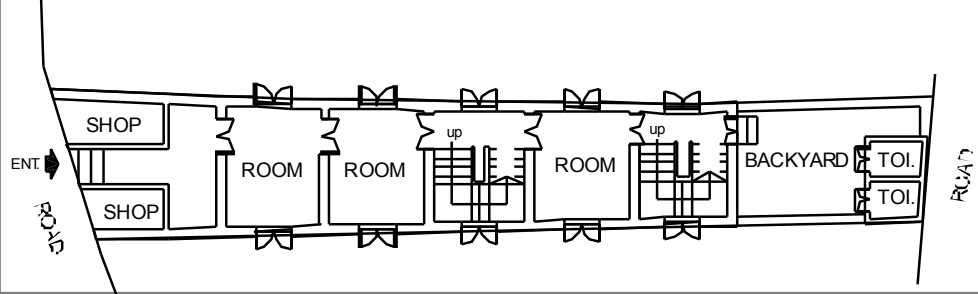


Fig 4: Traditional shophouse at plot no. 27

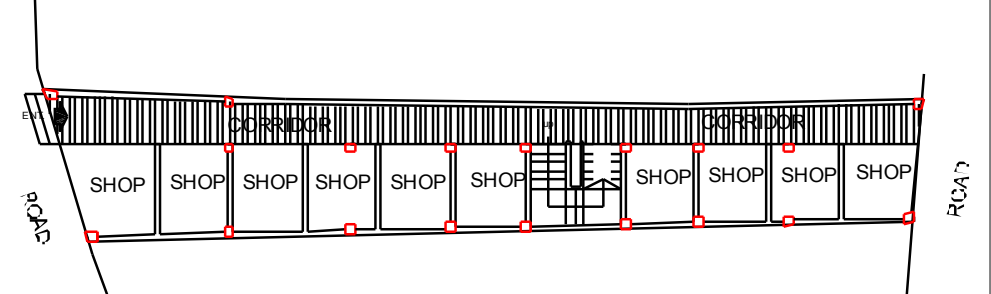


Fig 5: New shophouse at plot no. 27

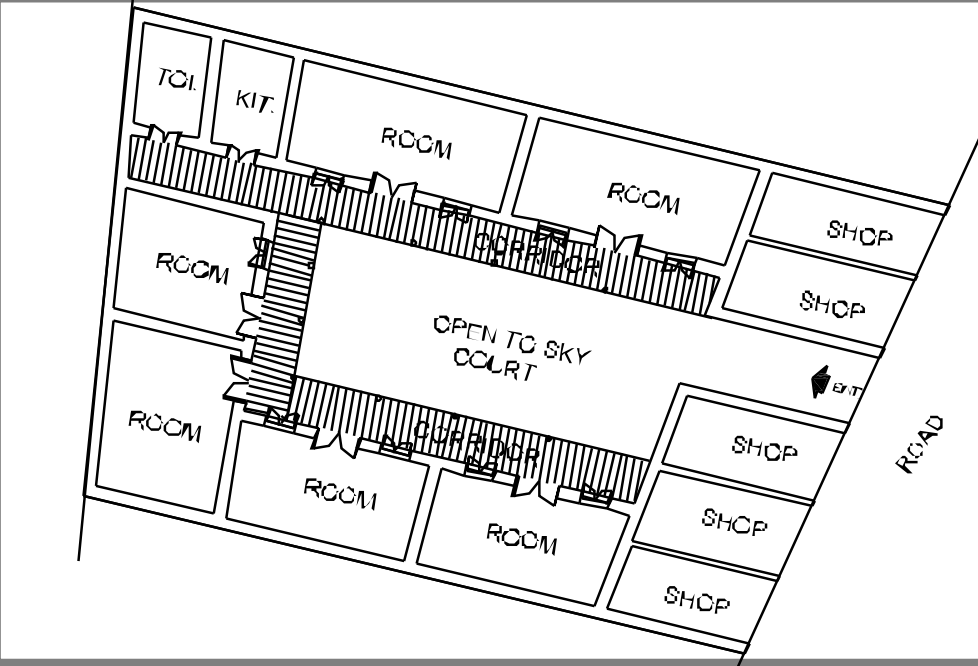


Fig 6: Traditional shophouse at plot no. 29

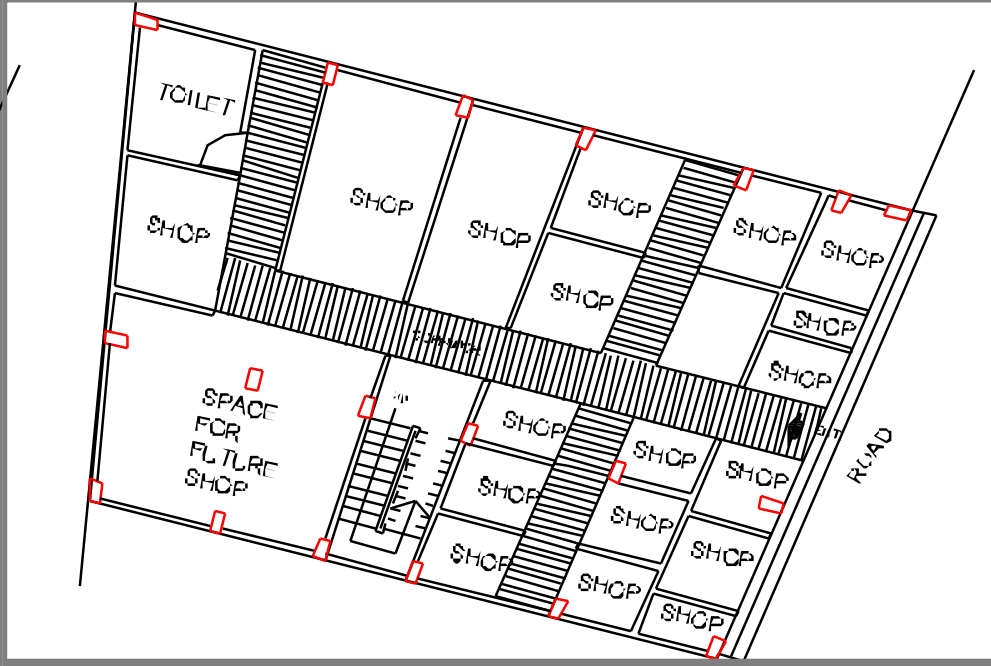


Fig 7: New shophouse at plot no. 29

The study, aims to examine the relationship between the spatial structure and locational aspects of shophouses in old Dhaka and proceed to investigate the impact of the changes of built forms of Tanti Bazar in spatial terms. The spatial structure of old Dhaka is modeled from different historical periods till to date and the "Space Syntax" method is used to analyze the spatial properties of street configuration like accessibility to find out its interrelationship with the locational aspects of shophouses and their organization pattern. The spatial organization of built form of Tanti Bazar is used as embedded system in spatial analysis to reveal the changing level of spatial properties of street with the shophouses due to the morphological changes of built forms.

Spatial structure of shops in Tanti bazar



Fig 8: Layout of shops in Tanti bazar in late 1980s

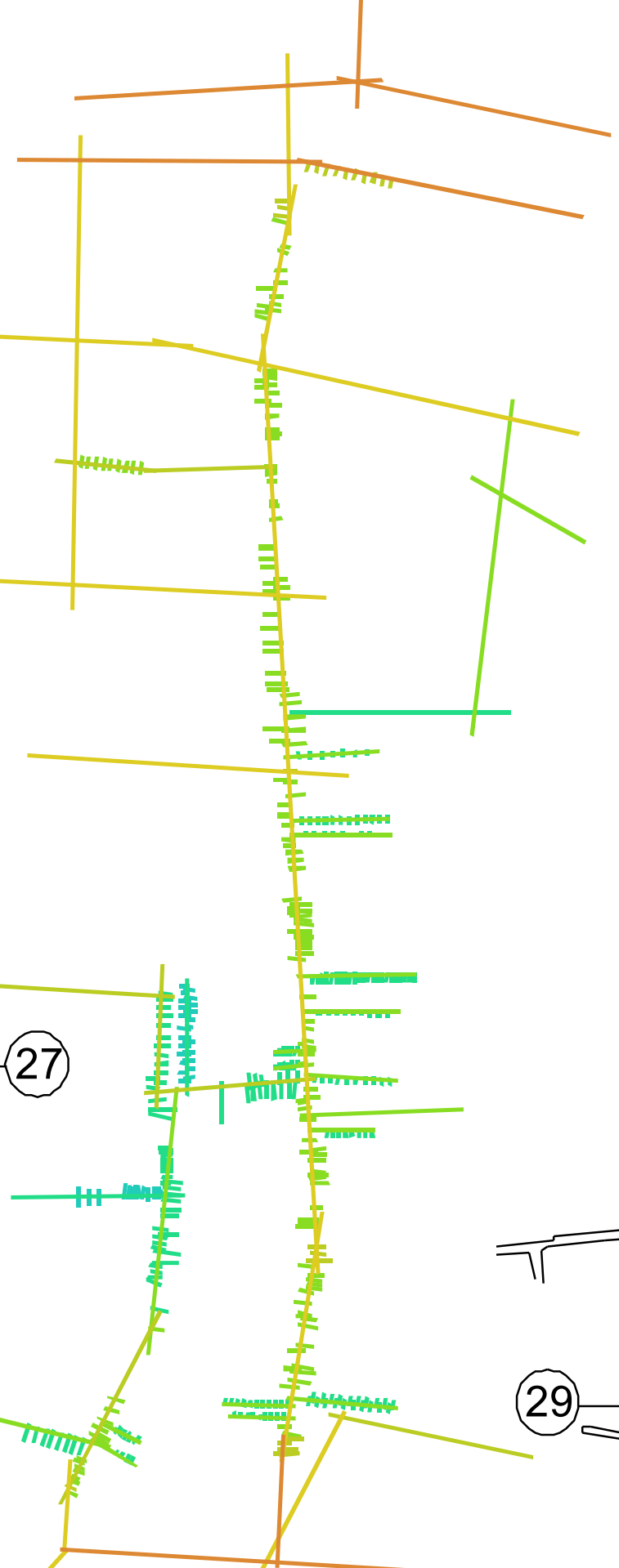


Fig 9: Local integration of street including linkage to shops in late 1980s



Fig 10: Layout of shops in Tanti bazar in 2010-2011

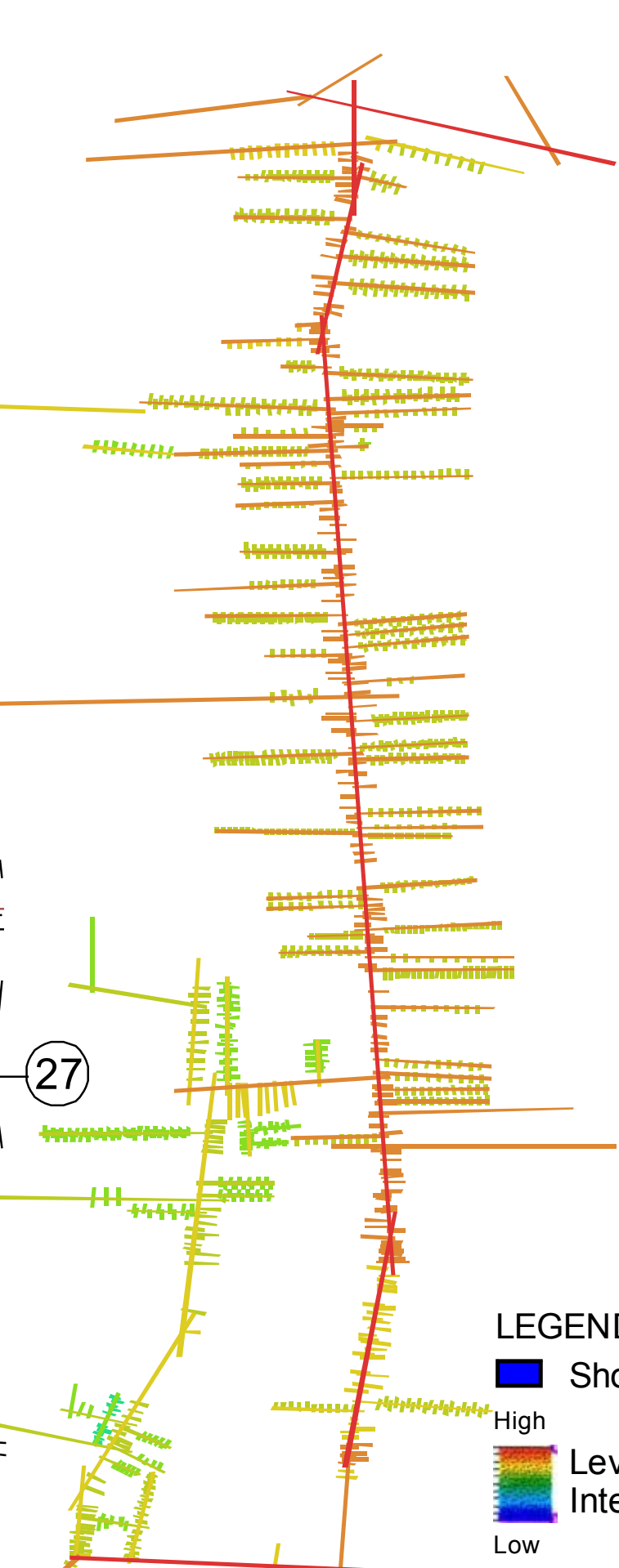


Fig 11: Local integration of street including linkage to shops in 2010-2011

LEGEND
Shops
High
Level of Integration
Low

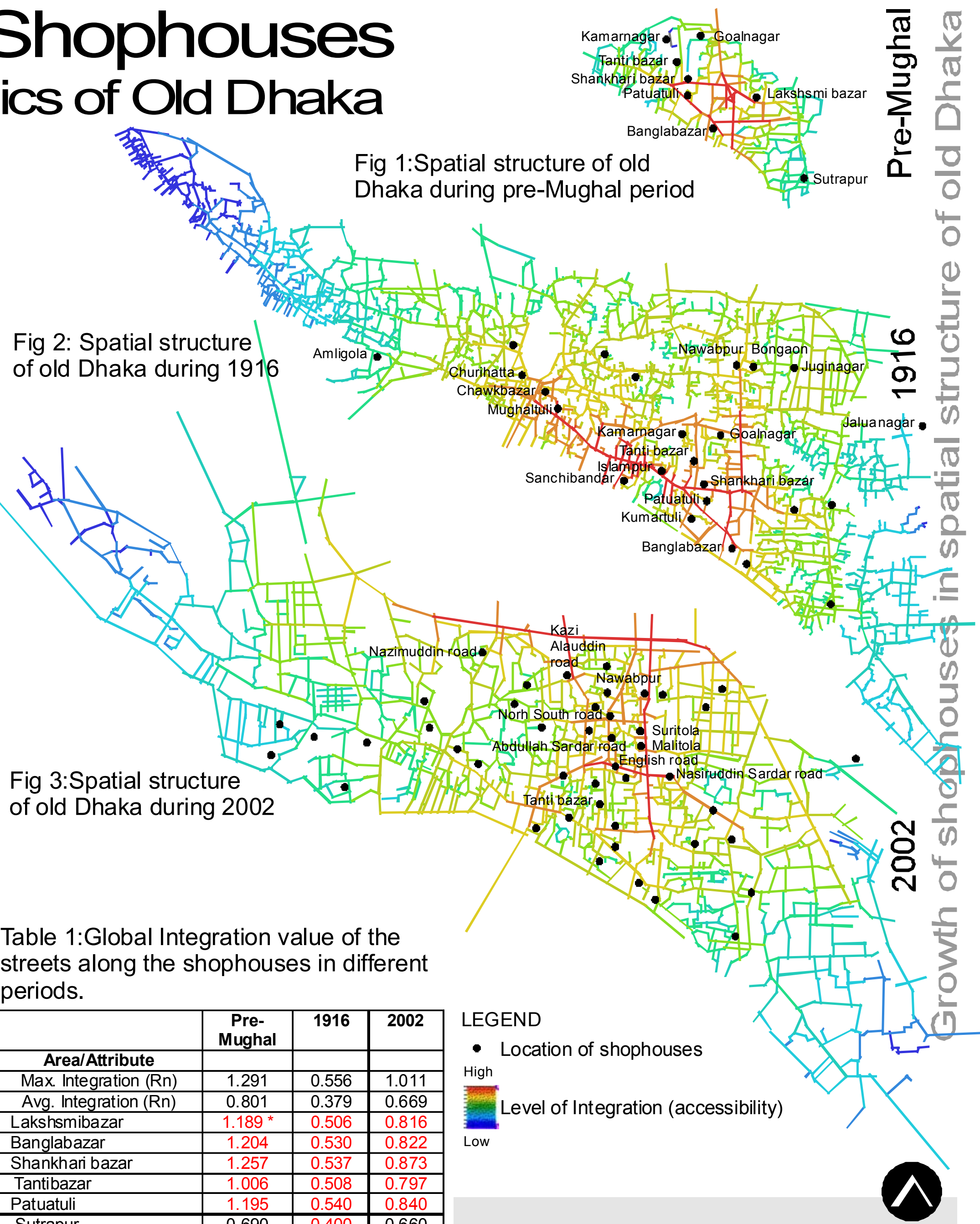


Table 1: Global Integration value of the streets along the shophouses in different periods.

Area/Attribute	Pre-Mughal	1916	2002
Max. Integration (Rn)	1.291	0.556	1.011
Avg. Integration (Rn)	0.801	0.379	0.669
Lakshmi bazar	1.189 *	0.506	0.816
Banglabazar	1.204	0.530	0.822
Shankhari bazar	1.257	0.537	0.873
Tanti bazar	1.006	0.508	0.797
Patuati	1.195	0.540	0.840
Sutrapur	0.690	0.400	0.660
Kamarnagar	0.784	0.473	0.710
Goalnagar	0.652	0.429	0.763
Baniannagar	-	0.419	0.822
Kumartuli	-	0.515	0.762
Jaluanagar	-	-	0.705
Juginagar	-	0.422	0.799
Kagaztola	-	0.485	0.809
Chunhatta	-	0.461	0.701
Sanchibandar	-	0.523	0.908
Kasatuli	-	0.450	0.778
Kayatholi	-	0.451	0.685
Mughaltuli	-	0.540	0.842
Chawkbazar	-	0.531	0.804
Nawabpur	-	0.526	0.896
Islampur	-	0.556	0.896
Urdu road	-	0.463	0.701
Bongaon	-	0.498	0.985
Amigola	-	0.371	0.842
Posta	-	-	0.585
Channighat	-	-	0.687
Islambagh	-	-	0.677
Ray Narayan Dhar road	-	-	0.585
Banshal	-	-	0.932
Nazimuddin road	-	-	0.776
Siddik bazar	-	-	0.808
Kazi Alauddin road	-	-	0.970
Aga Sadek road	-	-	0.753
Suritola	-	-	0.899
Malitola	-	-	0.899
Nawab Eusuf road	-	-	0.927
English road	-	-	0.977
North South road	-	-	0.918
Nasiruddin Sardar road (Dulai khali)	-	-	0.966
Murgitola (Dulai khali)	-	-	0.872
Lohar Pool road	-	-	0.727
Rankin street (Wari)	-	-	0.843
Lutfur Rahman road	-	-	0.805
Majed sardar road	-	-	0.819

* The texts in red indicate the integration values those are above the average integration of the system.

The major finding of spatial analysis of old Dhaka is that the integration core of old Dhaka has shifted many times. But Table-1 shows that the location of shophouses has positive correlation with the spatial structure of the city as in most of the cases the integration i.e, accessibility value of the location of shophouses is above the average integration of the system. Thus whenever shophouses had grown in new areas of old Dhaka, they mostly located themselves to the accessible roads.

The accessibility of the streets of Tanti bazar (Fig 11) have increased from 1980s (Fig 9), but the accessibility of the shops of new shophouses have decreased (Fig 10 and Fig 11) along with the morphological changes of the built form which has put some negative impact on the trading as direct connection with the street is needed for trading. So major finding of the study is that the location of shophouses have positive correlation with the spatial structure of the city but shops of new shophouses that penetrated deep into the building away from the street have failed to take the economic advantage of the accessibility of the streets. .

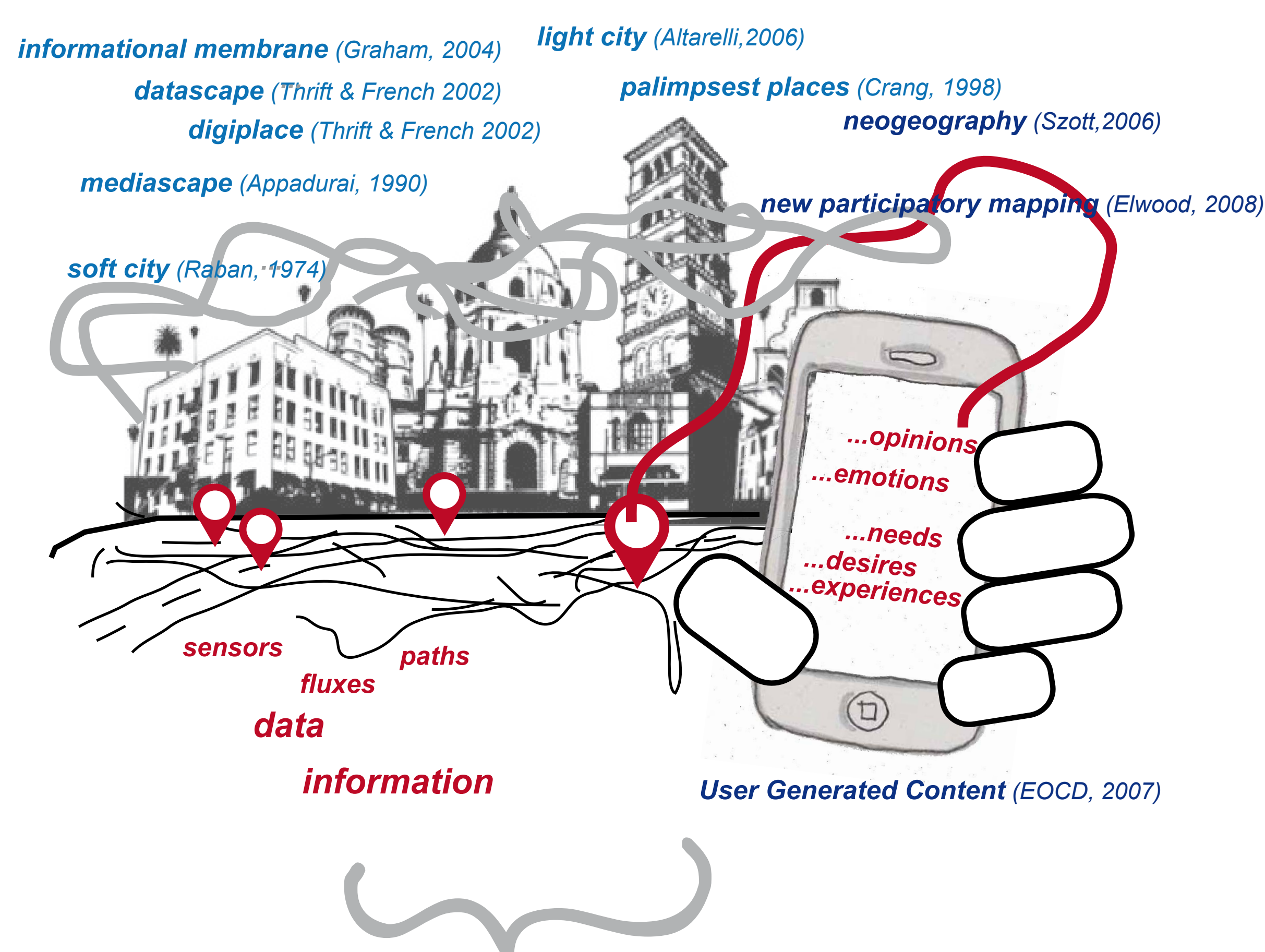


depicting perceived city-scapes

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Paolo Ciuccarelli (paolo.ciuccarelli@polimi.it) Associate Professor, Politecnico di Milano, Dipartimento INDACO.

(abstract)

Depicting Perceived City-Scapes is an ongoing research that aims at designing a new method for interpreting, crossing, analyzing and visual representing quantitative and qualitative data at the urban scale; with the aim of returning **dynamic polyphonic images of the city** as it is used and perceived by its denizens. The research is first experimenting a method for crossing and inquiring the digital traces able to enlighten potential answers to unsolved urban questions, in order to improve decision-making processes at urban scale. A fundamental further part of the research is the design of new visual languages that could enable the understanding of urban phenomena and the discovering of patterns of behaviors through the visualization itself.



(background)

More and more methods for harvesting and analyzing (through text-mining and sentiment analysis) digital traces embedded into streets and building, and directly shared by citizens, are evolving and becoming open and easy to be used.

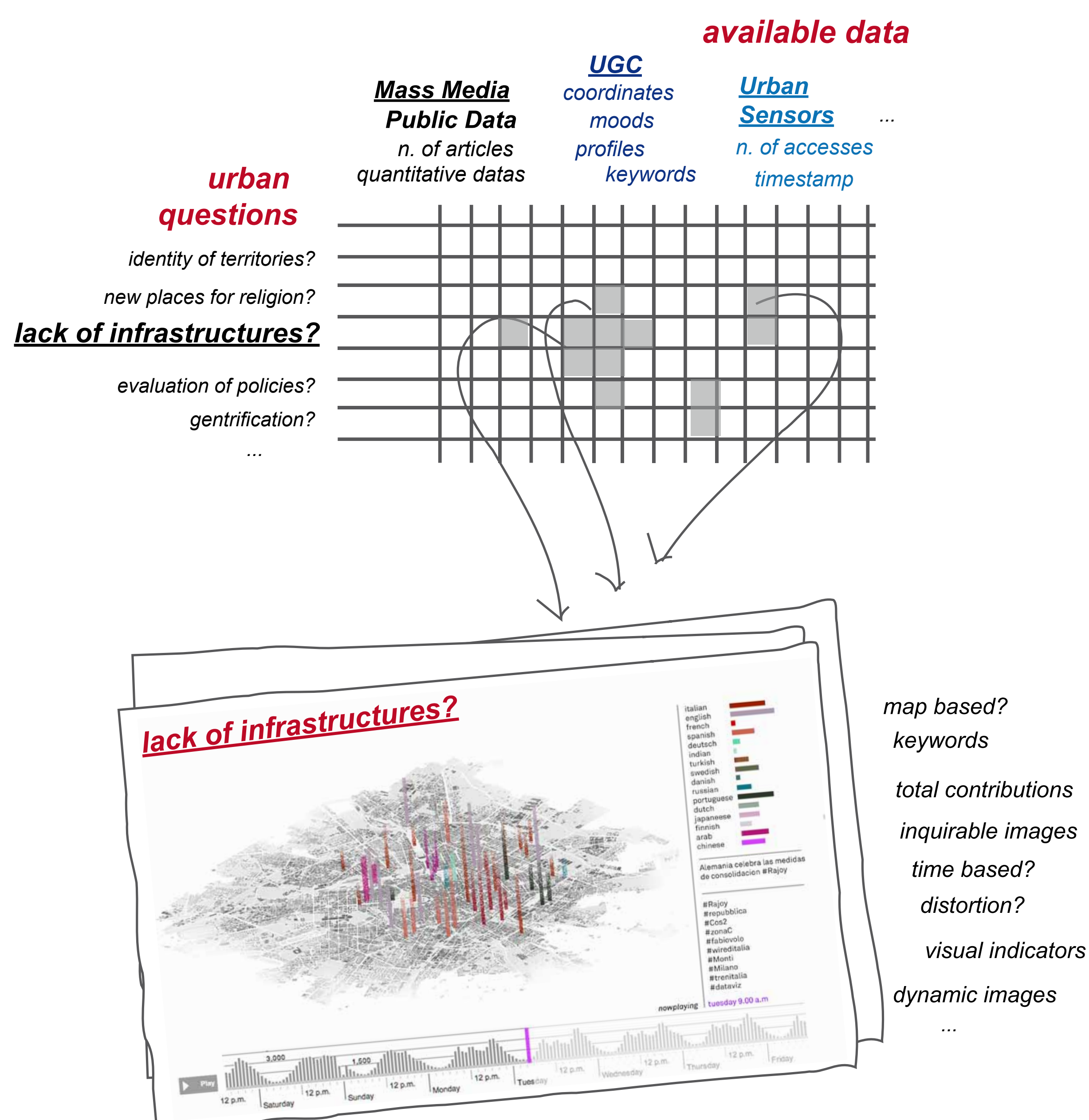
If properly crossed and returned, such digital traces could offer new insights about the city, which are of great interest both from a economic and political perspective:

- **for citizen**, allowing them to feel the pulse of the population and discover potential ways of improving their urban experience;
- **for the public administration**, allowing to evaluate and foresee urban planning strategies;
- and **for the private** sector as well, allowing to determine where and when to invest.

(methods)

The research is experimenting a method to properly organize the knowledge we can extract from those data in order to enlighten potential answers to unsolved urban questions, providing a high level of data querying and pattern analysis and constantly extracting urban qualitative indicators.

The method is constructing a **matrix** where **question of urban interests** (collected and organized trough a collaboration with an international network of professionals and researchers in urban fields) are crossed with **kind of information** that those data returns.



(visual narratives)

Aiming at offering meaningful and immediate interpretable collective urban stories, the research is testing and evaluating new ways of visually representing the combination of data that the matrix enlighten as important. The final goal is to create **new languages** that applied into dynamic visualizations can be capable to extract new insights on cities and citizens through the visualization itself.

(aknowledgments)

the ongoing research and experiments are conducted with: Paolo Patelli, Luca Simeone and Salvatore Iaconesi.

(links)

<http://www.polyphonicities.org/>

www.densitydesign.org

<http://www.scoop.it/t/urbansensing>



Tema 1 Knowledge of the City for Urban Transformation

Beatrice Mariolle

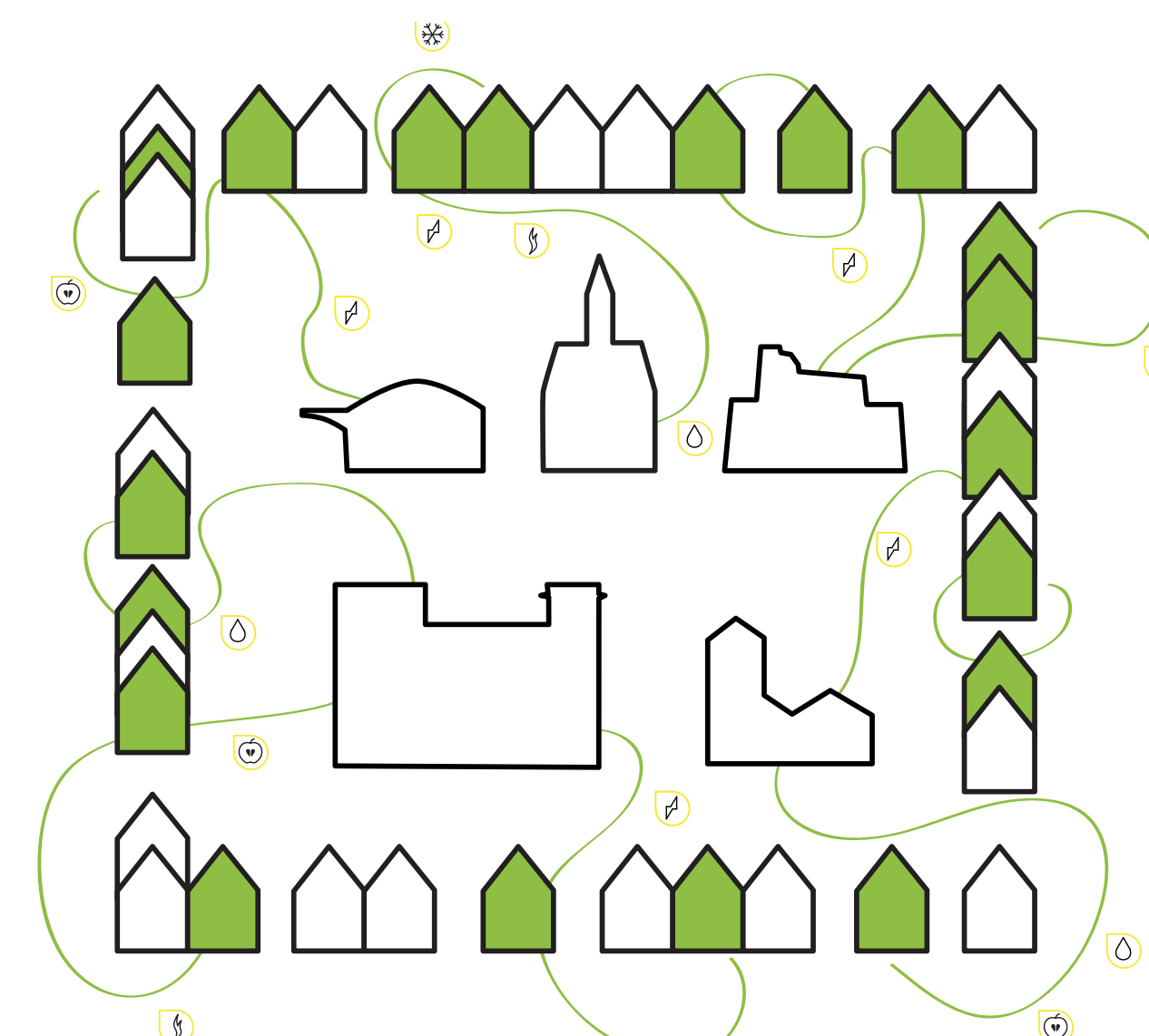
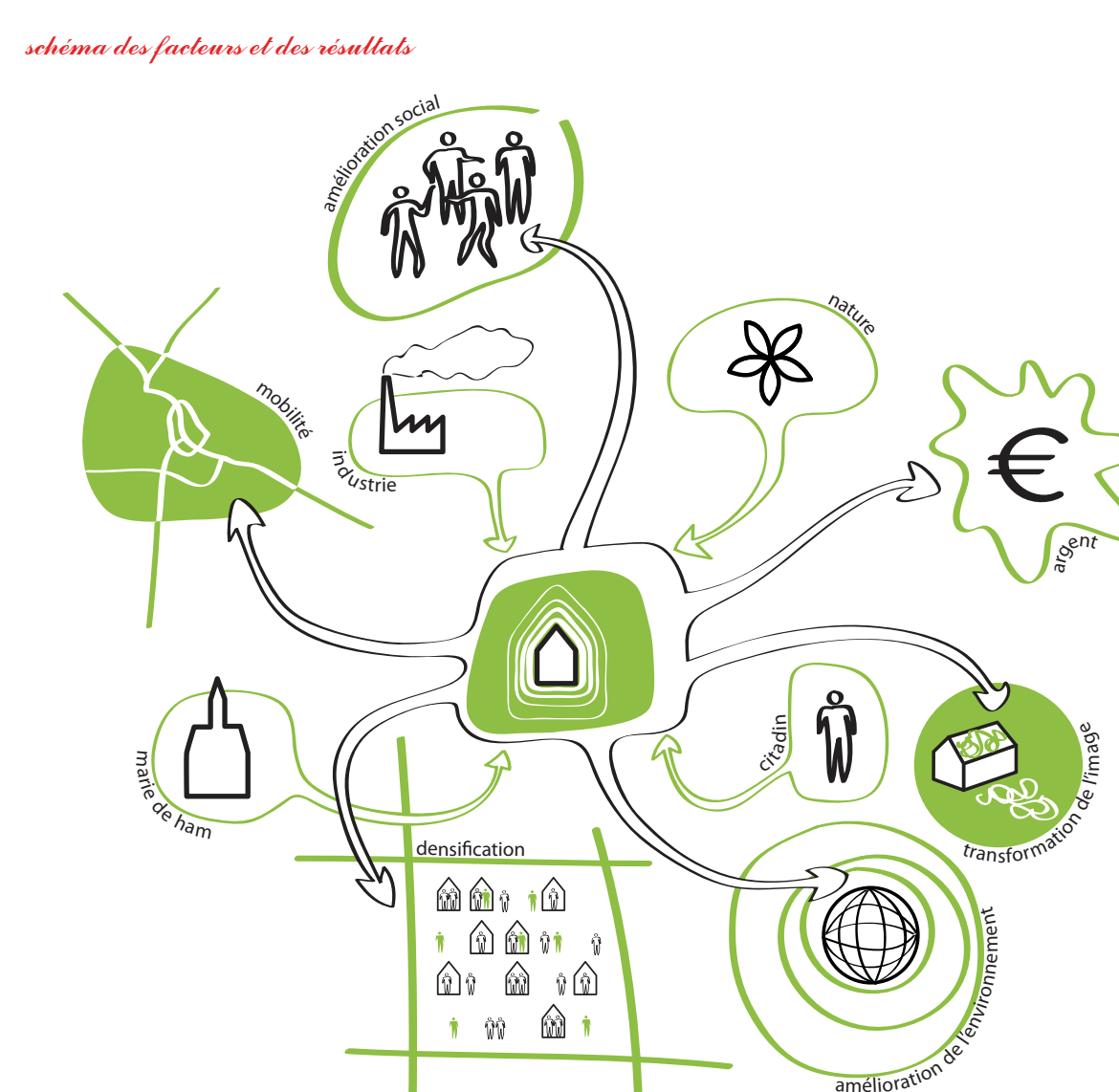
Ecole Nationale Supérieure d'Architecture Paris-Belleville
France

BEATRICE MARIOLLE PARIS BELLEVILLE - IPRAUS

ARCHITECTURE BETWEEN RESEARCH AND TEACHING PROJECT IN LOW DENSITY TERRITORIES_NATURE AS A RESSOURCE FOR SELF SUFFICIENCY

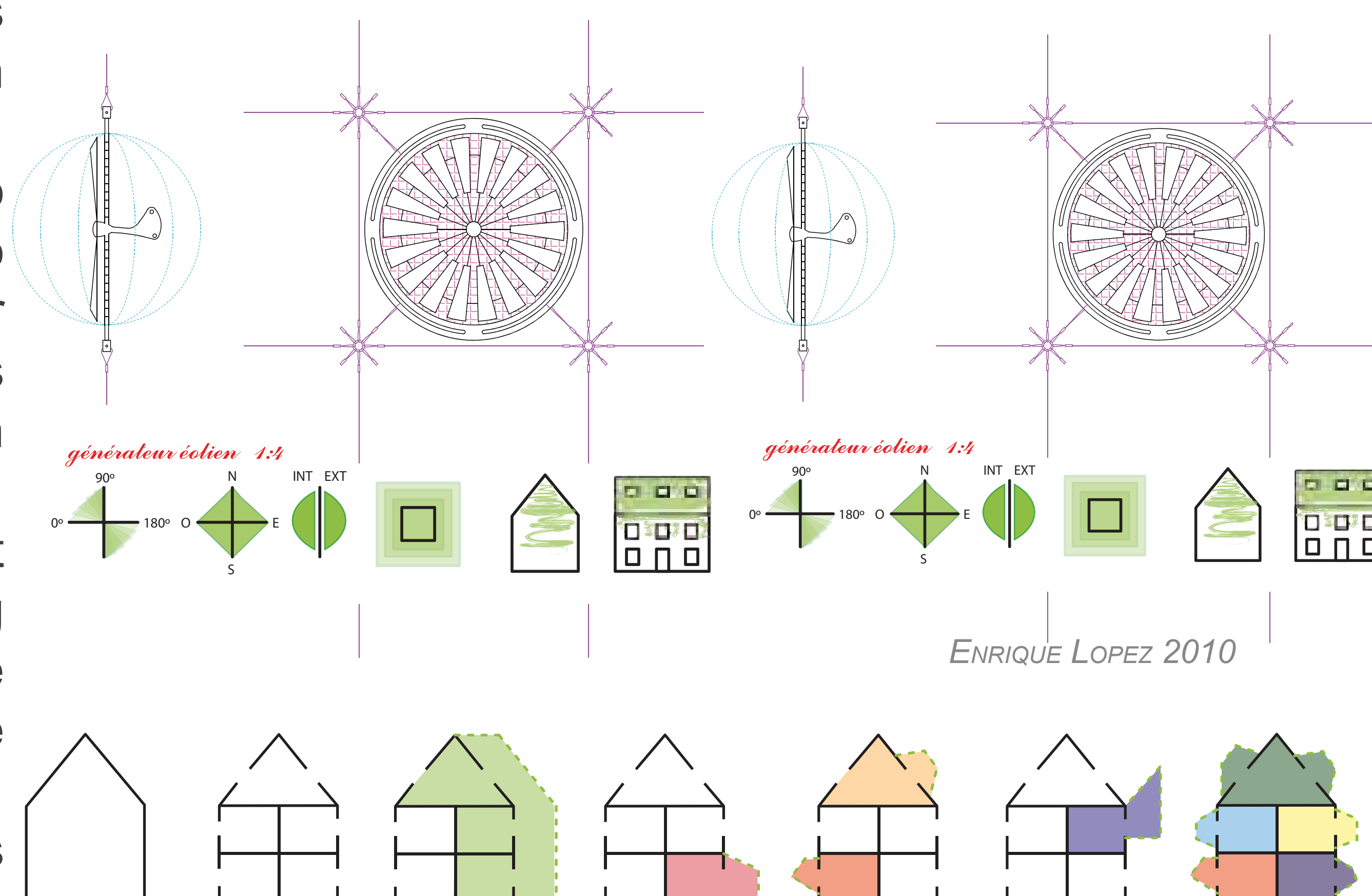
Key words: ecology, low density, Landscape, rurburbia, metabolism

This teaching, carried out for several years now with students preparing their Master in architecture, relies on personal research concerning low density territories. The question could be: can low density territories be considered being sustainable?



Architecture + nature = urban metabolism

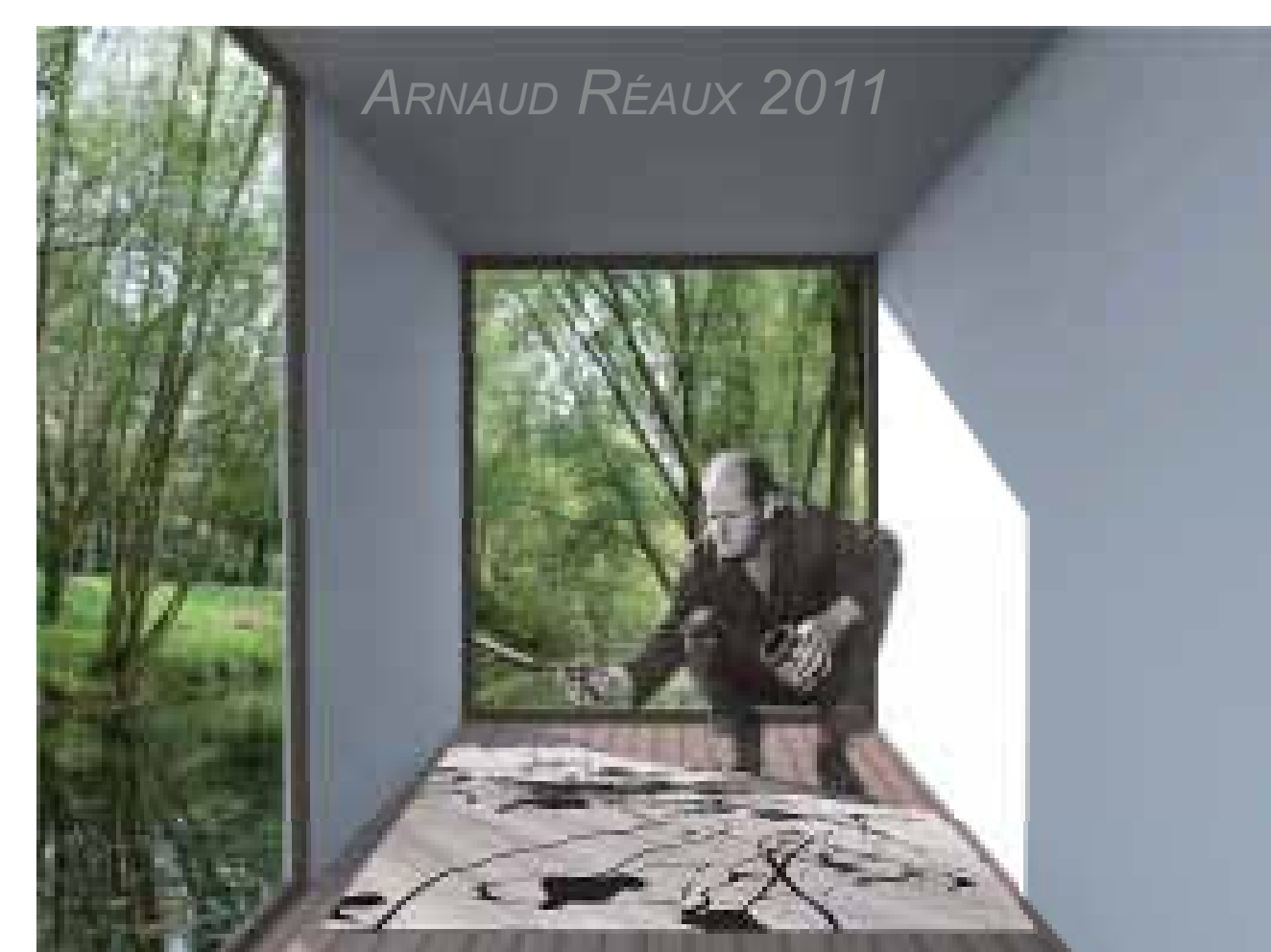
The progressive vision of the 20th century has led to the building of technical networks accompanying the increase in urbanization. These systems, conceived in the dense city to compensate for its distance to nature, are inappropriate for the periphery. New exchanges are to be imagined between architectural and territorial scales, natural environment and built areas. It is about experimenting a reciprocal link between the natural environment and the morphologies of the built areas, positioning the constructions in a virtuous circle between needs, waste and recycling.



ENRIQUE LOPEZ 2010

Experimental studio: architecture and physical environment
context = earth + water + waste + air + biodiversity + minerals + sun

This experimental studio takes place in small periurban or rurban towns. The project concerns an “architectural experience” tackled from the territory towards the built, searching for a location, suitable for the installation of accommodation, in a reciprocal linking of the morphologies of the natural and built environment. The project is carried out simultaneously on various scales: those of the city 1/10 000° - 1/1000°, those of the accommodation 1/500° - 1/50°.





Tema 1 Knowledge of the City for Urban Transformation

Barbara Pau
Università degli Studi di Cagliari, Italy

The aim of the research is to investigate the traditional Mediterranean architecture by studying the characters of the *Mediterranean space* and the wall as an element of structure of these places; the classification of the various typologies of internal-external spaces alternate and structure the settlement at different scales and the relevance that these spaces have in characterizing a place and an introvert culture.

In this geographical and cultural area, the wall gains qualities which go beyond the strictly structural and constructive function, becoming a structuring and qualifying element for settlements and living spaces and also the expression of local identity. The research, by “interpreting” the wall as a conceptual category, wants to give an answer to the deep need of improvement of the urban habitat architectural quality within a more proper relationship between identity characters and contemporary project. In the Mediterranean countries, we will inevitably identify some primitive elements which characterize, build, structure and distinguish public from private spaces. Courtyard, wall, the cell and road are “particles”. When they combine organically, they model settlement patterns and determine spatial perception, both partial and global.

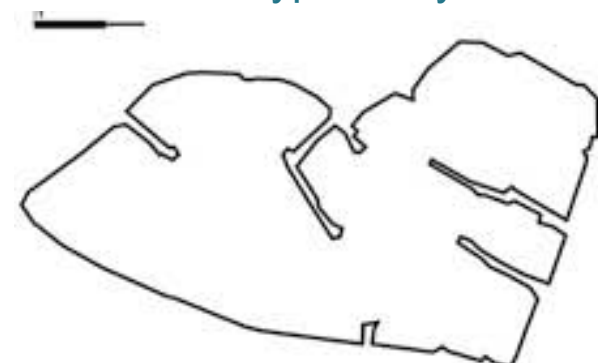
The space detaches itself from the continuity of the landscape surrounding the built-up area, becoming even more “internal”. It is a stereotomic space based on the archetype of the enclosure.

In this sense the wall plays a central role in the internal development dynamics of the settlement, becoming the “creator” of the domestic space, around which we can recognize the introvert nature of these places. It regulates the relations among the built-up areas by regulating the relations between public and private. The ramified structure of the streets through narrow alleys gives emphasis to the introvert nature of the settlement, the alley becoming another

San Vito, Sardinia, Italy. Planimetric processing of urban tissue characterized by the system of streets branched that mould the blocks.



Urban block type analysis



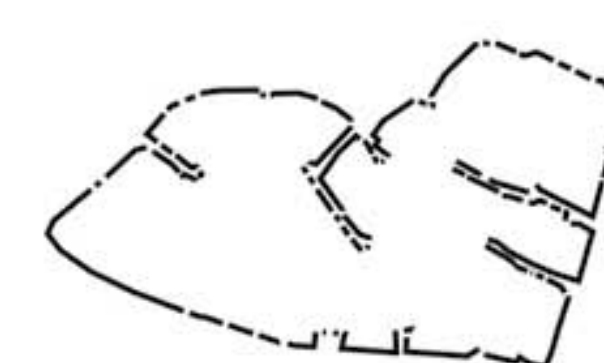
block structure:
the role of alley



living fabric of courtyard house:
relationship between built areas
and empty spaces



intermediate space:
courtyard access system



permeability of the urban fabric

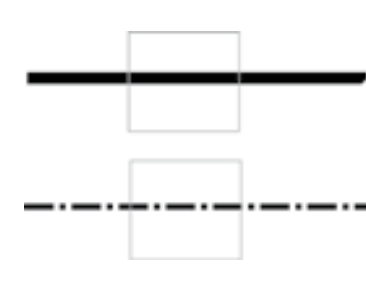
Urban space genesis.
Spatial and perceptive relations



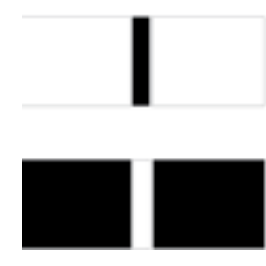
scheme type 1: built - street - courtyard = wall v - urban space - wall s
Windows and door (interruption of wall) are few and concentrated in specific places.
The public space is bounded by a built (wall v) and the courtyard enclosure (wall s).



scheme type 2: courtyard - street - courtyard = wall s - urban space - wall s
The interruption of wall are few with only function of access. The wall is a continuum.
The public space is bounded by the courtyard enclosure (wall s).



limit



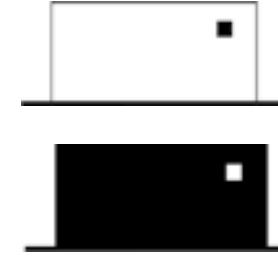
wall &
neutral space



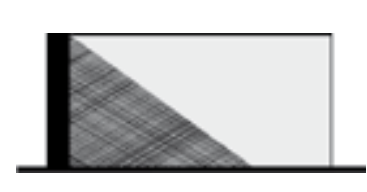
stereotomic
continuum



permeability



wall &
its absence



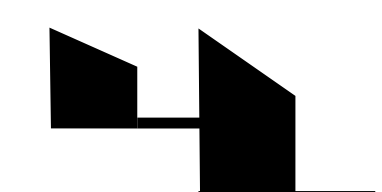
light &
shadow



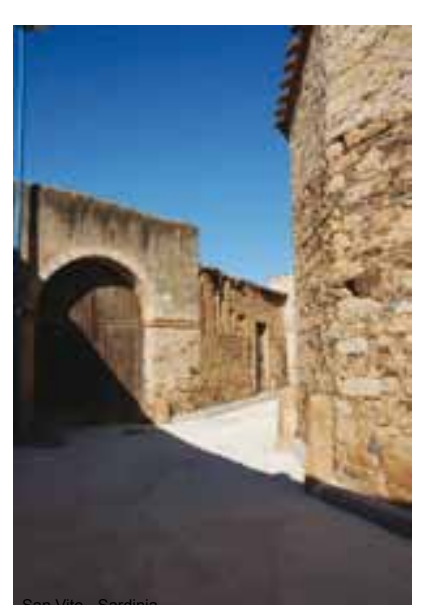
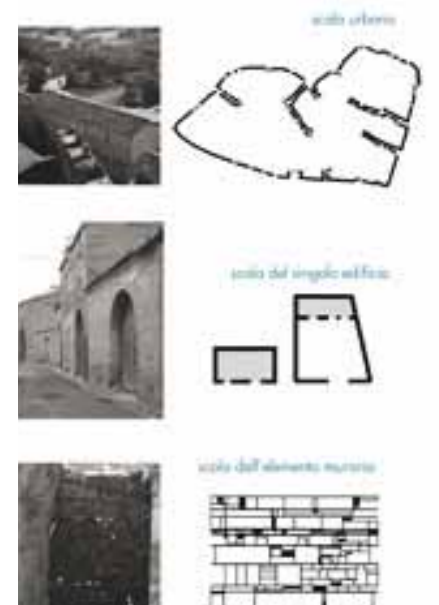
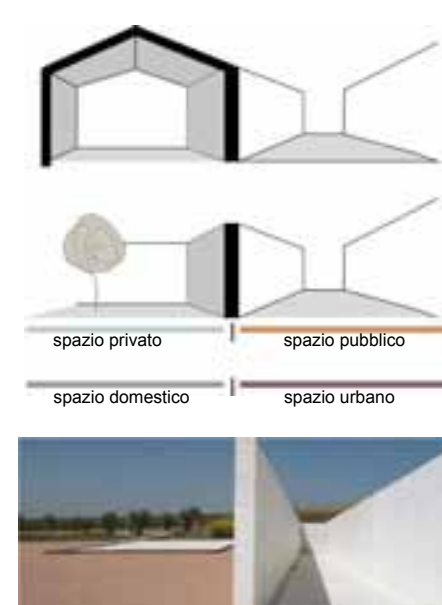
heaviness &
lightness



texture &
tactility



wall &
ground



filter between public and private gaining the status of “semi-public”. On the street, the long wall enclosing the courtyard, physically and visually defines the public space, mostly acting like a boundary and strongly characterizing the perception of the internal image of the built-up area itself, thanks to the continuous dialectical tension between inclusion and exclusion from the space.

▲ The wall as a conceptual category creates numerous subgroups. The relation of homology generated at the various scales of the built-up, makes the wall a participant of the definition and the formation of the characteristics of settlement, block, street and their inter-relations, becoming one of the symptomatic factors of the local living and building culture.

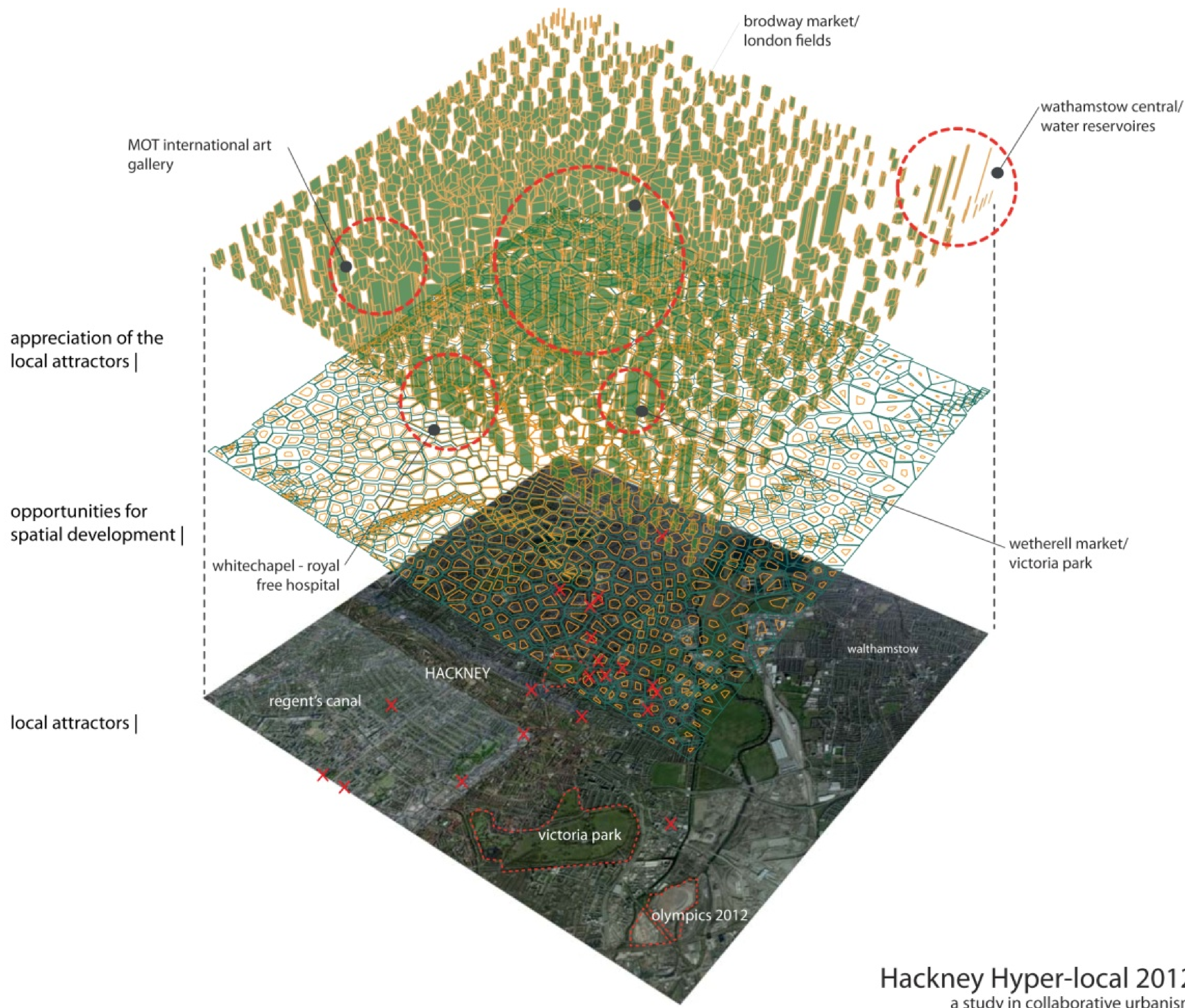




Raffaele Pé PhD Candidate – Politecnico di Milano

Hyper-localism and self-regeneration: a collaborative model for strategic urbanism

Spatial awareness in digital communities to discern emergent patterns of urban transformation



Hackney Hyper-local 2012
a study in collaborative urbanism

The poster presents a study on transforming data harvested from a social network into spatial explicit information, which can be relevant for urban redevelopment. The experiment focuses on the issues related to the regeneration of the suburb of London Hackney, a site in need of spatial improvement, nonetheless one of the most vibrant and enlivened district of the city. This exercise approaches transformation as a matter of systemic interpretation (Berger, 2006) of relevant social phenomena in local colonization, promoting spatial awareness to envision urban re-configuration: the use of hyper-local websites to gather information on the local for planning purposes implies the acknowledgement of their ability to promote social inclusion and spatial awareness as drivers of urban development. In order to disclose such dynamics, the employment of parametric maps can provide a tool for the detection of self-generated patterns of urban appropriation. Organized networks are comparable to self-organized communities in spontaneous relationship, that build their activities on principles like participation and shared action (Rossiter, 2006). Exploited as instruments for urban monitoring, they can structure a correspondence between biographies of places and the agenda of their users, recreating an objective interweave between the history and the geography of a place.

The outcome of the modelling process is an augmented image of the city (see above), which shapes some of the intrinsic characters of the neighbourhood and it envisions possible future developments. The generative map displays the relationships existing between what is perceived by its inhabitants as a local attractor (as detected from the hyper-local network *Yeah Hackney* <http://www.yeahhackney.com>) and the surrounding operators. Spatial disposals for urban growth and their attractiveness for local users can be identified and visualized. Integrating these social aspects into the urban planning and design process more collaborative and socially acceptable paradigms of urban development can be informed (Scholz, 2011). In particular, the map shows that, where the site of the Olympic Games 2012 is located, the sense of attraction is quite low in comparison to the great offer of public spaces and commercial facilities. The inhabitants of Hackney don't seem to be affected by the presence of such a global infrastructure nearby, despite the intentions of the mayor to land the Olympics in this context to provoke urban regeneration following perhaps more consolidated practices in urban planning. The extrusions of the local attractors' appreciation (third layer on top of the model) indicate capillary entities like local markets or public spaces for art and culture as more appreciable drivers of regeneration.

A future development of the exercise will be the inclusion of real-time data used as rating system of the information provided by the map, to show how the model is received by the users on the hyper-local network before the actuation of any new plan or project. A more "dynamic" platform of spatial analysis can be fostered through the display of contents in constant update within a virtual forum where proposals can be assessed by rulers and users. This strategy could also provide a feasible answer to the issue of displacement processes, for which places attractive for certain social groups maybe not attractive anymore if they are transformed. The social media, recreating a continuous exchange between real life and virtual envisioning, can persuade the users' perception to mitigate the reception of planned urban transformations.



Tema 1 Knowledge of the City for Urban Transformation

Manuela Raitano
Università di Roma "La Sapienza", Italy

EAAE/ARCC Conference Milano 7/10 June 2012

Manuela Raitano / Rome "La Sapienza"

From Architecture *of* the City *to* >>> architectures *for* the city runs a substantial difference.
first one *fills* urban void with monumental scale building
second one put new buildings as a frame of *urban voids*



>>>>>>



We aim to focus this difference, supporting the idea that contemporary cities need architecture to provide a *network of services* for improving their quality of life, not their monumental quality.

The roman plan of Sixtus V was exemplary for Rossi's theories, fixing the succession of street-square-obelisk-Basilica and producing an urban pattern that worked as a sort of Counter-Reformation Church trademark, in which the Basilica represented the monumental element that gives identity to the whole.

From this famous urban pattern, still readable in the city of Rome nowadays, descends Rossi idea that a community can find identity through the form of its institutional architecture. But this theory is passed throughout the gap between ideal and reality, in front of the failure of politics, the uncertainties of institutions and the inanity of policy to manage urban transformation.

Consequently, today we define an *anti-rhetorical condition* for contemporary urban architectures: to be *friendly user*, conceived for the cities, to serve citizens and visitors, no more to represent themselves.

Recent architectural researches outline some possible operative strategies.



strategy # 1 *Housing as a qualified urban facility*

As a sort of *upgraded Unité* implemented to respond to a double scale of needs, ones of the inhabitants, others of neighborhood, housing can avoid a sense of closure and *expand urban vitality*, at the very opposite of the duality of 'fabric' and 'monument'



strategy # 2 *Infrastructure as material of architecture*

Finally freed from the exclusive dominion of technical engineering, infrastructure passes to be material of architectural design to *minimize its brutal impact* and to allow, at the same time, a *qualified kinetic fruition* of the cities



strategy # 3 *Public spaces as a network*

Small diffuse interstitial spaces interconnected allow a *continuous walk/bike fruition* producing an high quality of public spaces, generating a sort of '*democratic life style*' in which the citizens can have same opportunities in terms of mobility and urban fruition.





Tema 1
Knowledge of the City
for Urban Transformation

Ana Ferreira Ramos
Politechnic Institute of Castelo Branco, Portugal

EMBRACING THE OLD CENTRES IN THE
CITIES' GROWTH

Ramos, Ana Ferreira¹; Silva, J.A.R. Mendes²



A house is like a small city
and a city is like a big house

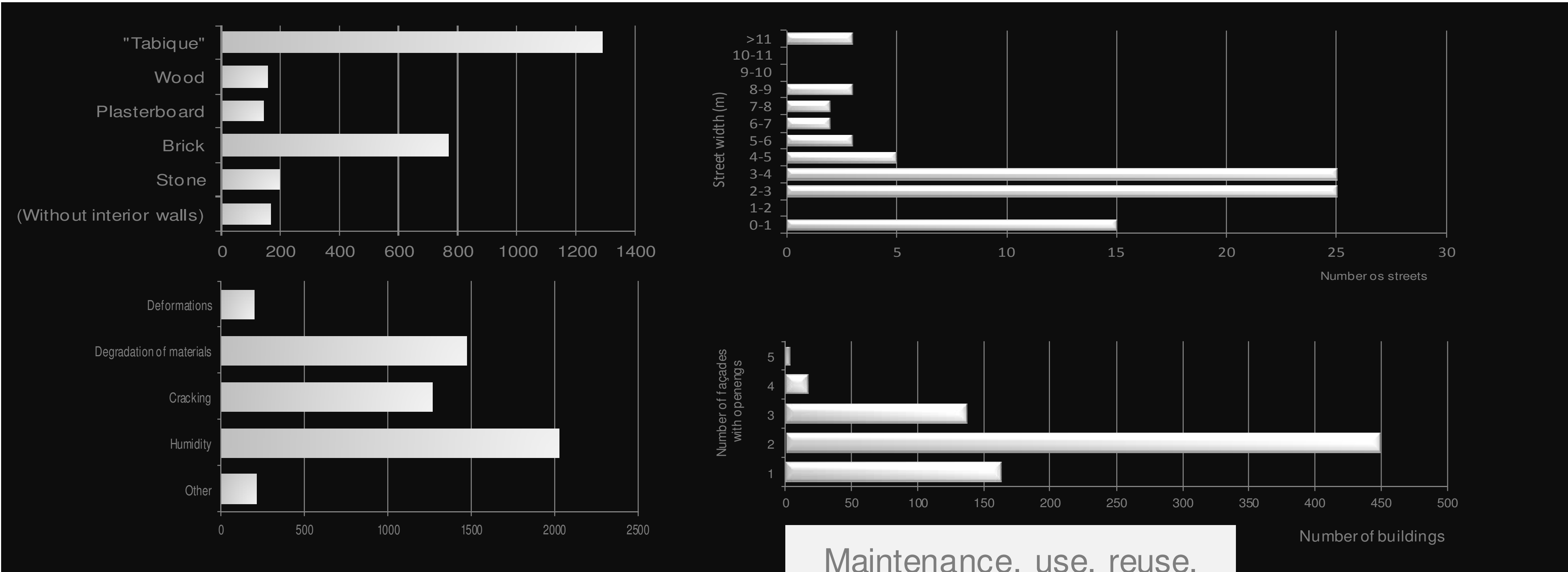
Cities in transformation
Research & Design

The fast development of new areas in Portuguese cities, and also the implementation of some politics that had discouraged the conservation of buildings due to the evolution of the rent values led to the neglecting of old areas that are characterized as the cradle and strategic centre of urban areas.

Along the years, these areas were defined by out of context and isolated interventions, as well as the aging of local inhabitants once that the old buildings don't answer the growing needs of comfort of modern and young families.



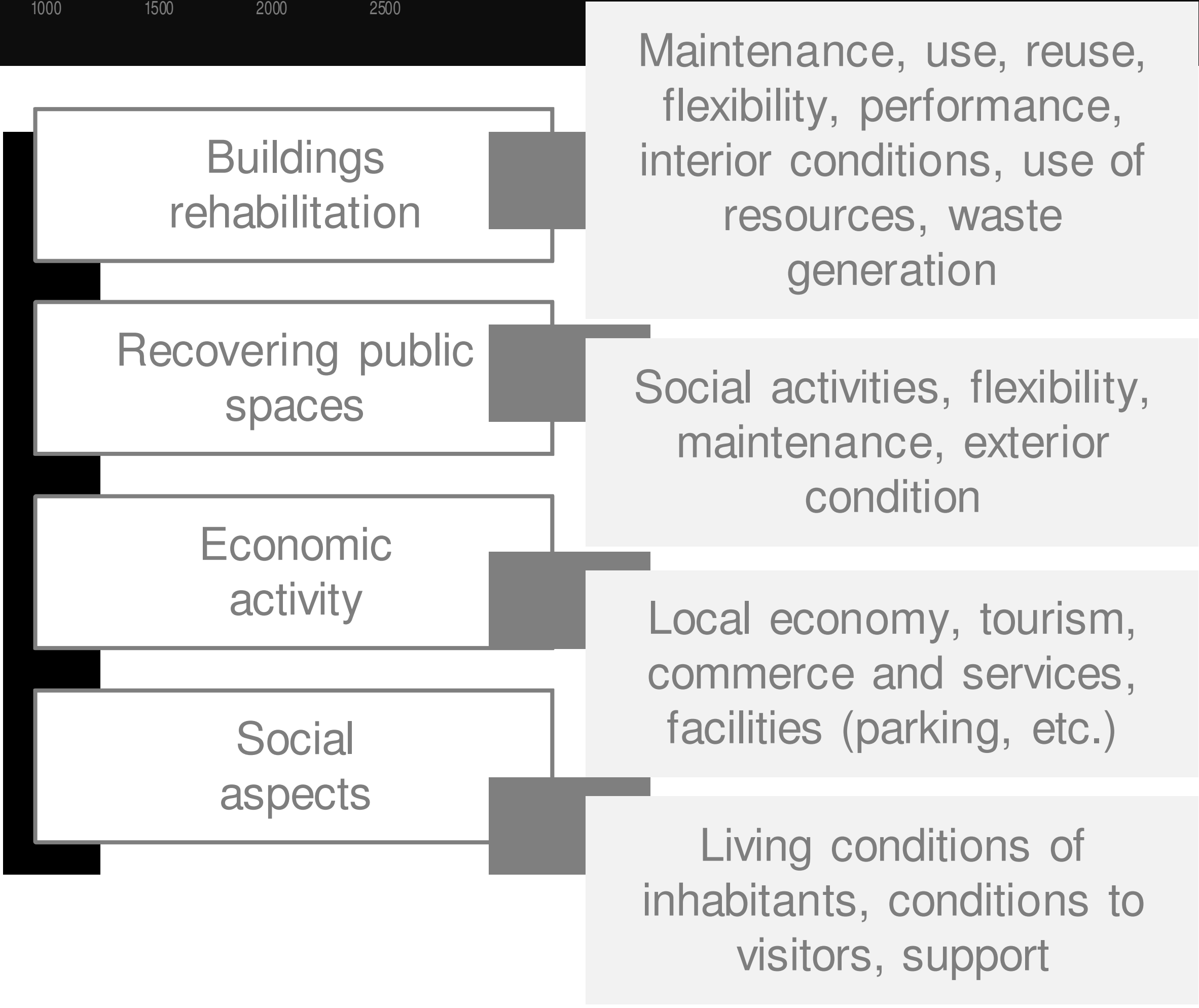
In order to check the state of conservation of buildings and urban spaces, as well as to know the living conditions, the old centre of Coimbra was carefully studied by team groups from University of Coimbra. Several data were collected making possible the characterization of this area and the conditions of local population.



Urban Rehabilitation Societies were created to grant the adoption of strategic guidelines of intervention in old areas with special attention at the following aspects:

The social encouragement must consider the life quality of occupants and the control of the cost of living.

The economic support must contribute to create self-sustainable poles. The environmental encouragement must promote the quality of natural and built environment in all levels – from urban context to the neighbourhood (old area); The cultural promotion must respect the memory and tradition.



Nowadays, a new challenge must be taken into account: How to grant the generation of urban sustainable areas? Besides the initial premises, the strategies for interventions have to include sustainable aspects related to the improvement of local inhabitants conditions.

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Sound towards new quality of urban transformations

Ida Recchia

Theories of sound

Starting from the theoretical experiences of: *Soundscape Ecology* that considers sound as an ecological parameter for environment (Schafer, 1977); the multidisciplinary approach to *Sound Architecture* of France Research (Laboratory CRESSON, 1990; Dandrel, 1990) that introduce qualitative Sound Maps to describe the urban space; and from the interpretation of Scandinavian research on *Sensorial Design* that illustrate how the senses can become parameters for architectural process (Pallasmaa, 2000), sound can be considered today as a quality parameter for the government of quality of urban space. These studies, and theories reveal sound as an aesthetic parameter and not only a quantity to control, because it is defined by its sensorial, symbolic and semantic meanings. Sound, in the large and middle scale, is considered as “property” that describes and characterizes, but also a “tool” for modifying or safeguarding the sound-quality of space.



Architectures of sound

Moreover the architectural production reveals today, in advance and even before every urban regulation, the innovative qualities of sound in design field. Some virtuous projects (LoLa Landscape Architects, NABITO, MVRDV, Zumthor, Mangado) anticipate the idea of using sound as aesthetic component of design and demonstrate the possibility to generate “sound ambiance” employing the use of sound effects. Or else it is demonstrated the generative use of sound that can be a starting point to create architectural and urban shapes.



Towards urban sound qualities

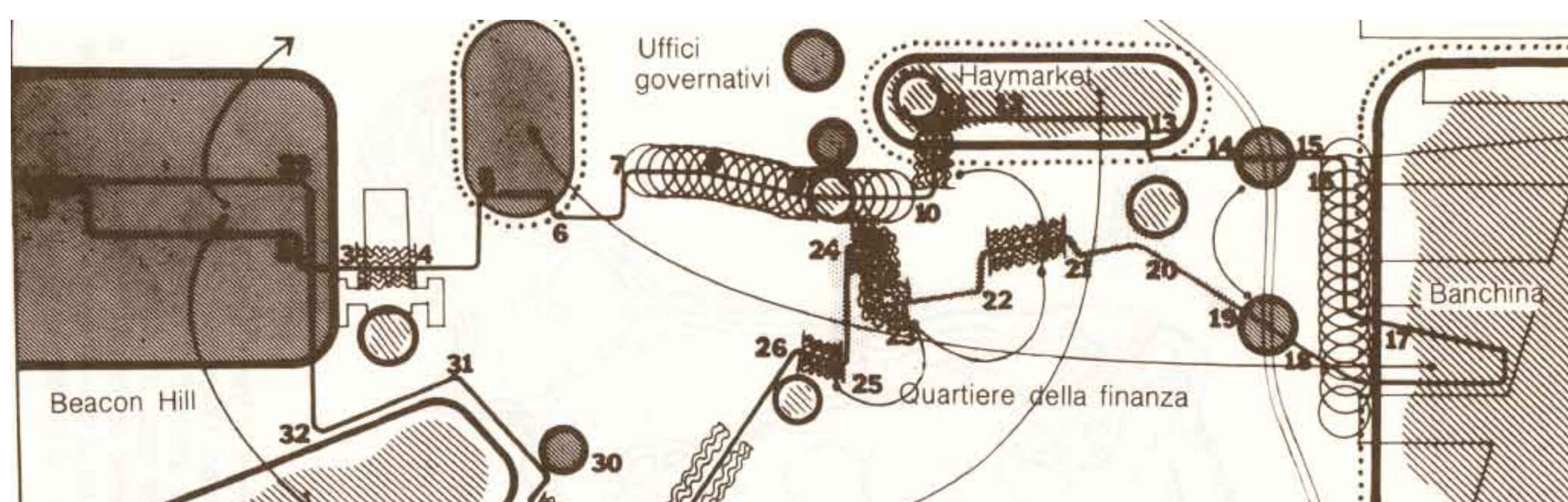
Sound-oriented theories and architectures can (re)animate today the urban debate on theme of sound. Building regulations and conventions, in fact, neglect the idea of sound as a qualitative parameter. And to fill this misalignment among theories, architectures and regulations it is suggested to introduce sound as a parameter to manage, safeguard and modify through the tools of urban design:

- inducing the sensibility on sound and noise as aesthetic parameters;
- introducing a qualitative definition of sound and noise;
- stimulating the use of qualitative Sound Maps to describe and operate in territories.

Figures:
Dandrel, Brusci, MVRDV,
Schafer.

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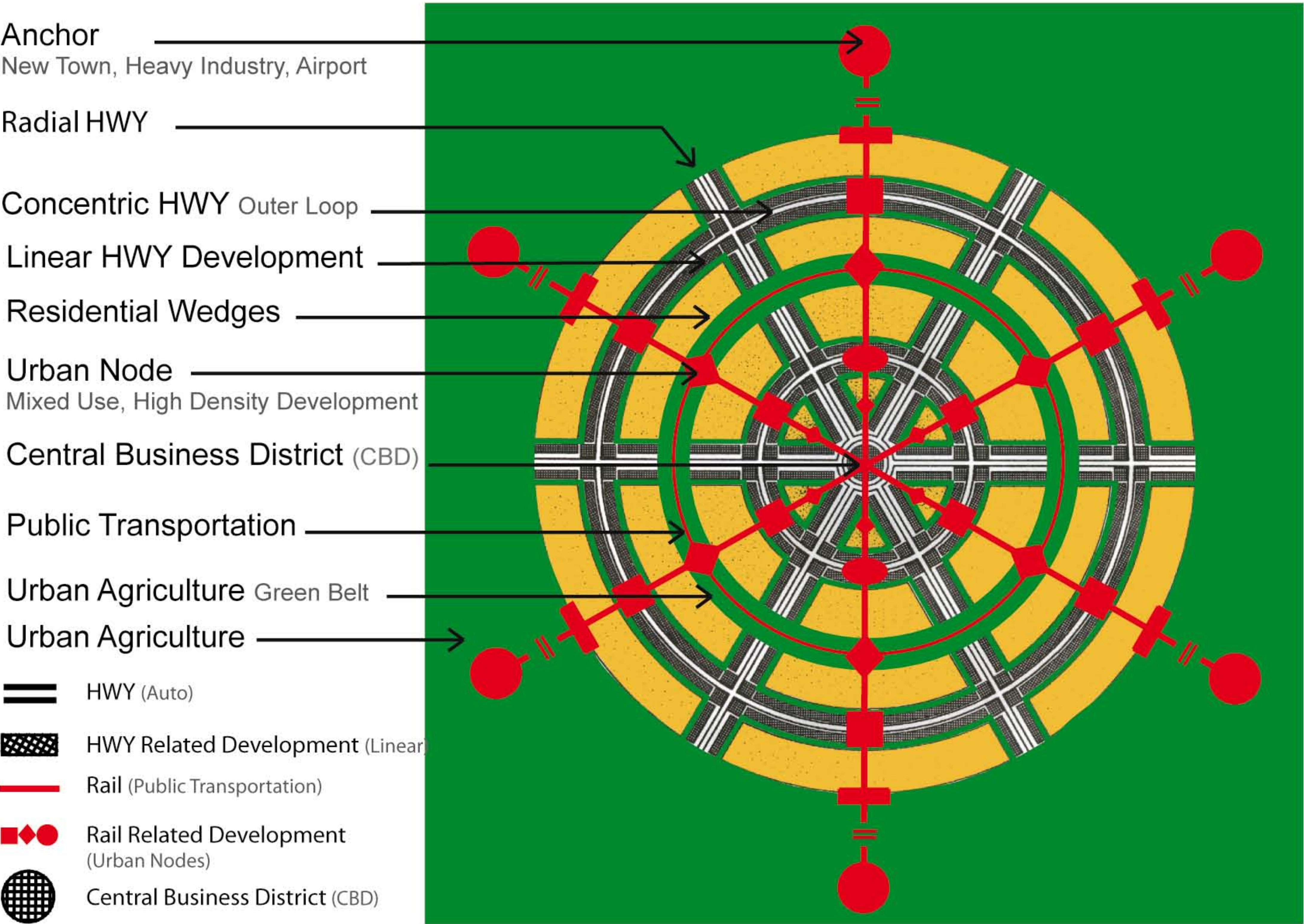




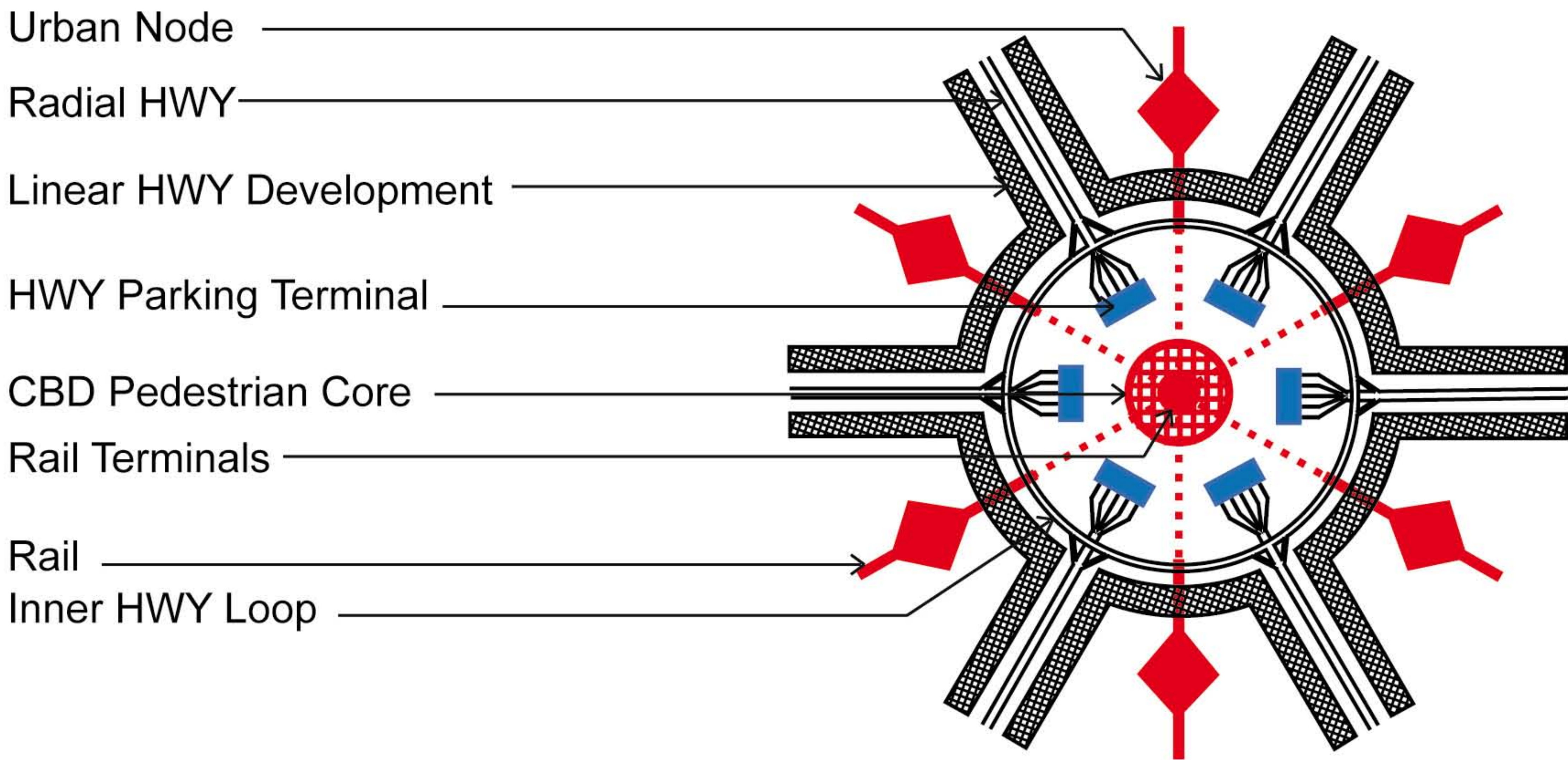
Tema 1
Knowledge of the City
for Urban Transformation

Shafik I. Rifaat
University of Houston, Texas, U.S.A.

MODEL FOR A FUTURE CITY



THE CENTRAL BUSINESS DISTRICT





Tema 1
Knowledge of the City
for Urban Transformation

Lorenzo Santosuosso
Politecnico di Milano, Italy

MILAN BY DESIGN - REFRAMING URBAN TRANSFORMATIONS

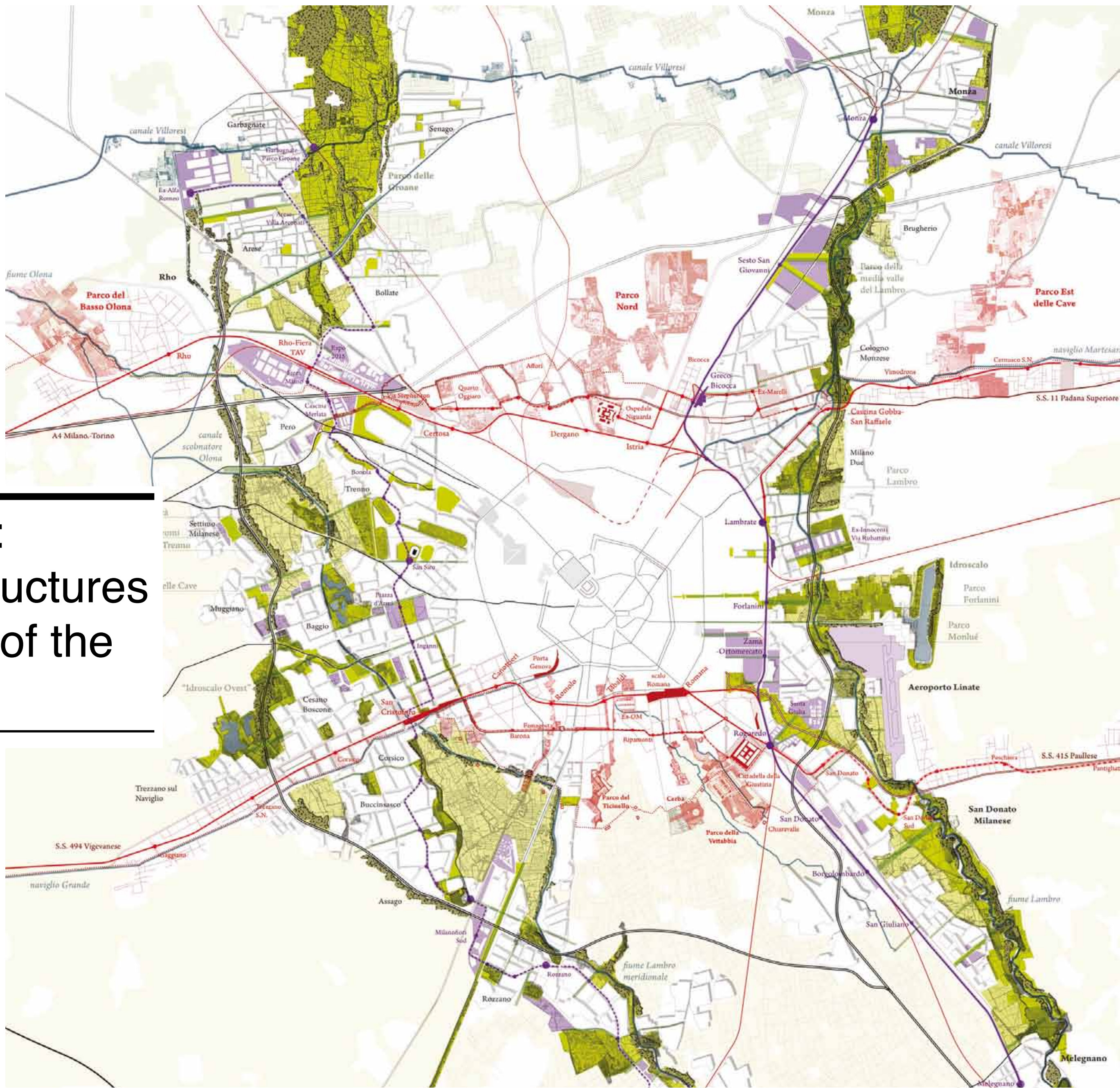
Lorenzo Santosuosso

Milan is currently in need of a project. Such a project should clearly state a method, which makes the project itself valid for the society, communicable to different subjects and sufficiently abstract to last over time. Thus the city needs to be recognized in its real dimension, a territory whose true boundaries are physical rather than administrative.

In this dimension open spaces cross the scales, organize relations between the various parts of the territory and represent a continuous and flexible centrality. Similarly, mobility infrastructures outline the development directions of the city and characterize its environment. Finally, form assigns, through the project, meaning and value to these materials.

Possible scenarios for the Milan

Open spaces:
new urban structures
on the edges of the
compact city



metropolitan area construct figures at different scales, which express a coherent design through the definition

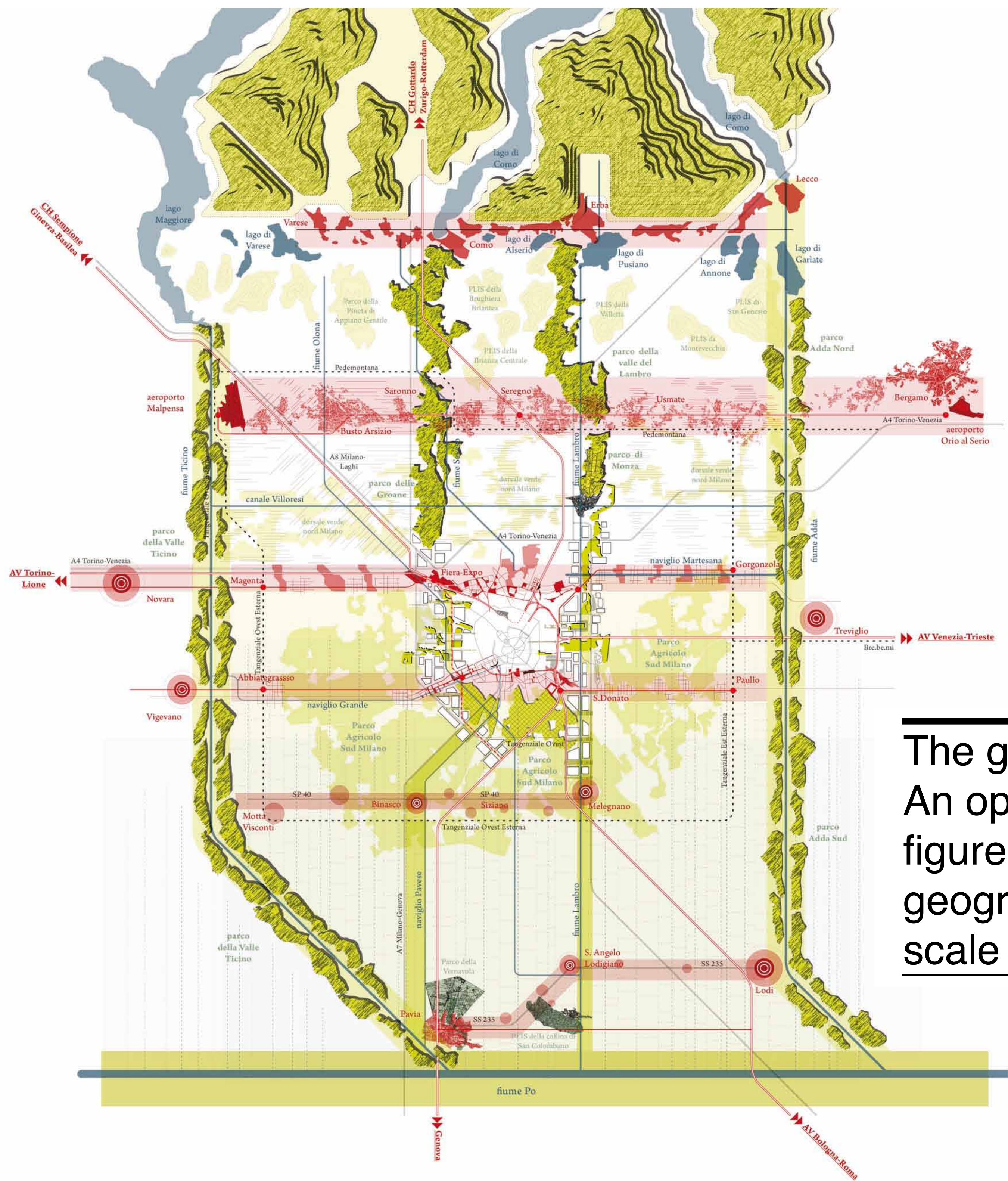
of hierarchies and relationships between the parts. The re-use of seven rail-yards in Milan highlights a network of voids connected by the new “circle line”. This network is easily recognizable within the north-south section of the Po valley and belongs to a wide mesh grid. Various parts of the territory, with their contemporary and historical centralities, are therefore connected to each other by public transport lines or by environmental corridors. They become elements of a global system and generate a flexible and open grid, which is the reference for future modifications of the territory.

According to the proposed vision, Milan could eventually

The grid.
An open
figure at the
geographical
scale

give value to the multiple initiatives of transformation. The elaborated scenarios offer a methodological framework that

encloses the many projects now underway and exploits the opportunities offered by financial interests and will give Milan a contemporary image.





Tema 1 Knowledge of the City for Urban Transformation

Giulia Setti
Politecnico di Milano, Italy

Theme 1. Knowledge of the City for Urban Transformation.

The Space of Industrial Fence.

Strategies for Consolidation and Removal of Architectural Traces in the Contemporary Cities.

Giulia Setti | PhD in Urban and Architectural Design | Politecnico di Milano

Contemporary city is symbol of its ever-changing, it's seems a beating heart, "*the city grows on itself*" [1] modifying and transforming what it was before.

Nowadays, the growing of the city has saturated every available spaces, the real problem is to understand how and where cities can still grow.

Cities keep traces and memory of their past; space inside the cities often change, while maintaining the relationships whit the existing context. Today, we cannot speak about available surfaces in the city or about huge urban voids as the place of the city's project: building the city for parts is no longer possible as it was until eighties.

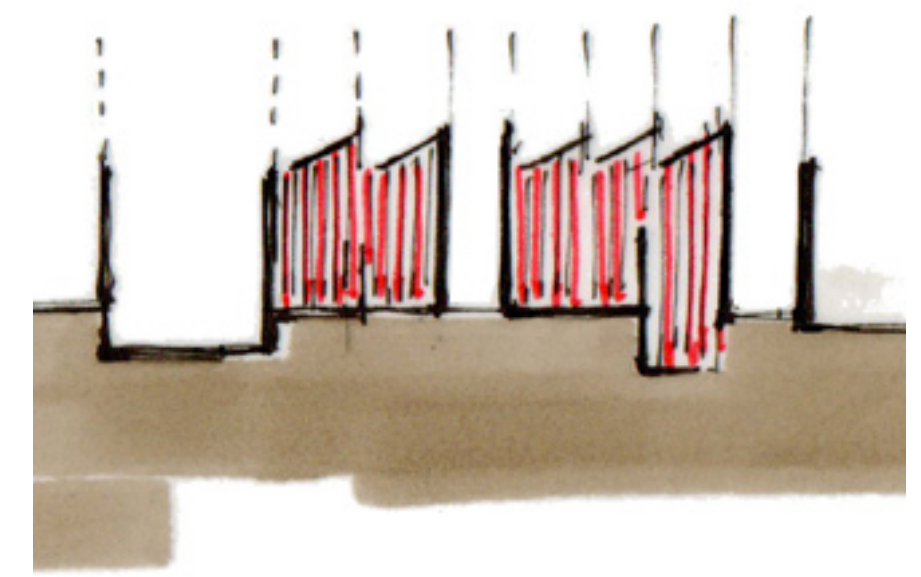
Building contemporary city means that the question of urban regeneration of consolidated tissues, that have lost their original characters, becomes a design practice.

Industrial enclosures become the places of the city's transformation; project must reflect on how it is possible to transform and recover the industrial fragments and ruins. Therefore, industrial archeology is not considered as a process of industrial building museification, instead it becomes a complex system of '*working operations on the artifact*'. How is it possible to work on the industrial ruins with operations of reconversion that are able to preserve traces of these places?

If the city and territory could be defined as a "*palimpsest*" [2] on which the project could intervene, what is the degree of consolidation of industrial tissues as the places of cities' transformation? What does the project could intervene modifying them? The issue that arises is to define a new identity of these parts of the city: an identity that should be able to create a new urban development and that it looks to the past as a resource.

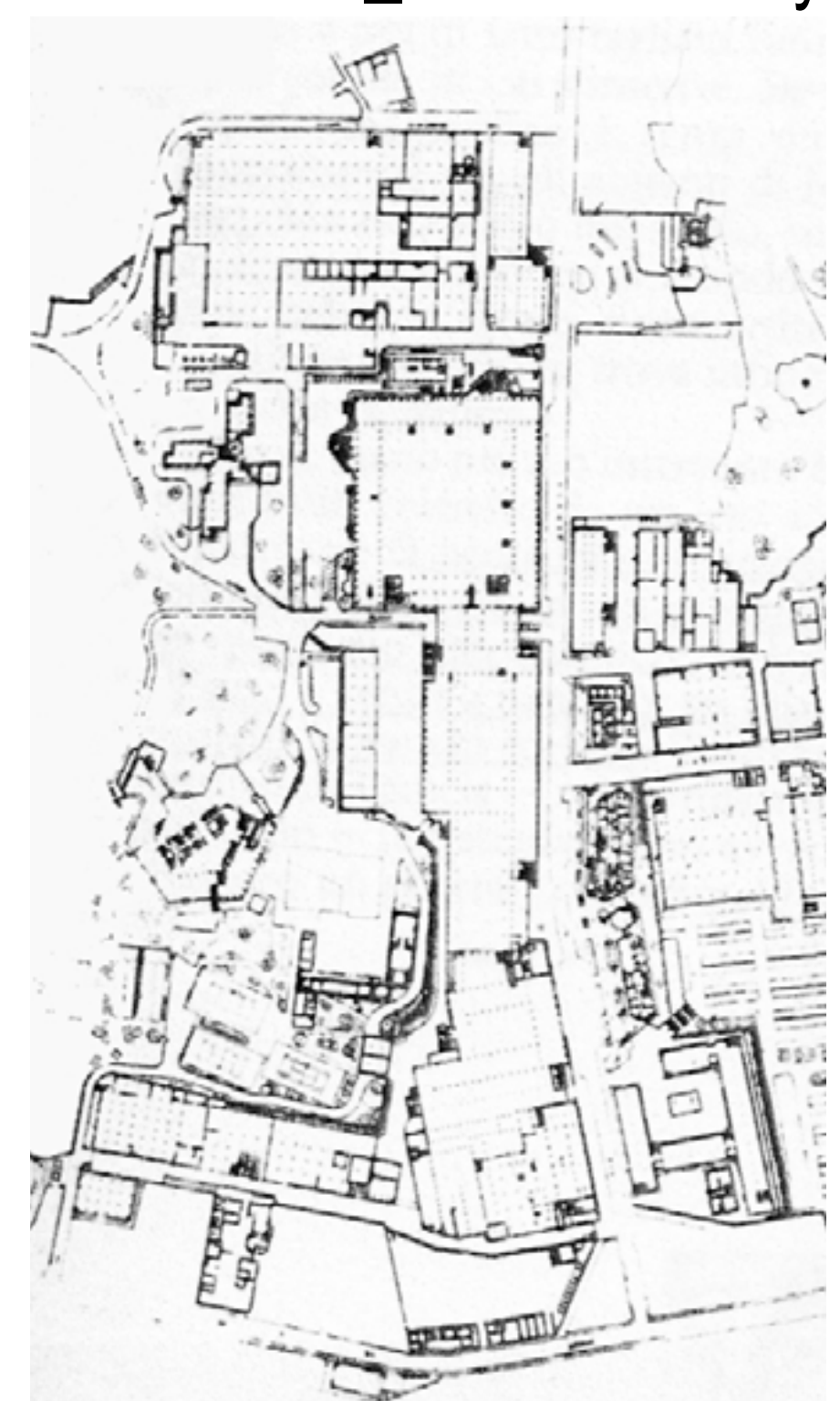
Regeneration of industrial ruins, that are between destruction and construction, could happen through design strategies that work on the topic of measure and urban scale. Infill – addition, demolition – subtraction, stratification, inclusion are design operations thanks to which it is possible to give new identity to the industrial buildings. Moreover, these strategies should defined a reconversion of areas in order to rethink industrial spaces as a space for new form of production. Not a total reconversion that it determines different uses of spaces, but a reconversion of industrial areas to allow innovative productions. Industrial enclosures become the contemporary image of the Diocleziano's palace in Spalato, where urban infill is a design strategies that saturates voids and it defines an identity through the regeneration of its spaces. If, until now, cities have been transformed through the redesign of new parts, composing different elements in a similar transposition of the '*Città Analoga*' by Aldo Rossi, nowadays, the point is to understand how built on built can work on existing artifacts.

_design strategies



[1] in A. Rossi,
L'architettura della città, CittàStudi, Milano
2006, p. 10.

_Olivetti factory

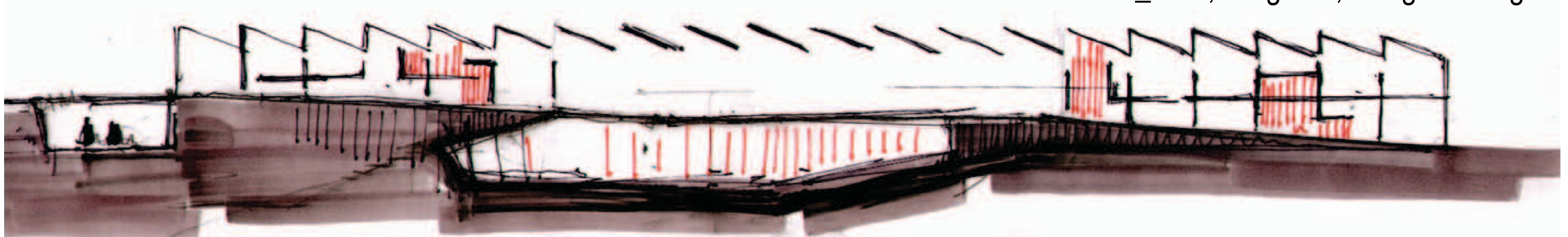


[2] in A. Corboz, *Il territorio come palinsesto*, Casabella, n. 516, 1985.

_OTE, Bergamo



_OTE, Bergamo, design strategies



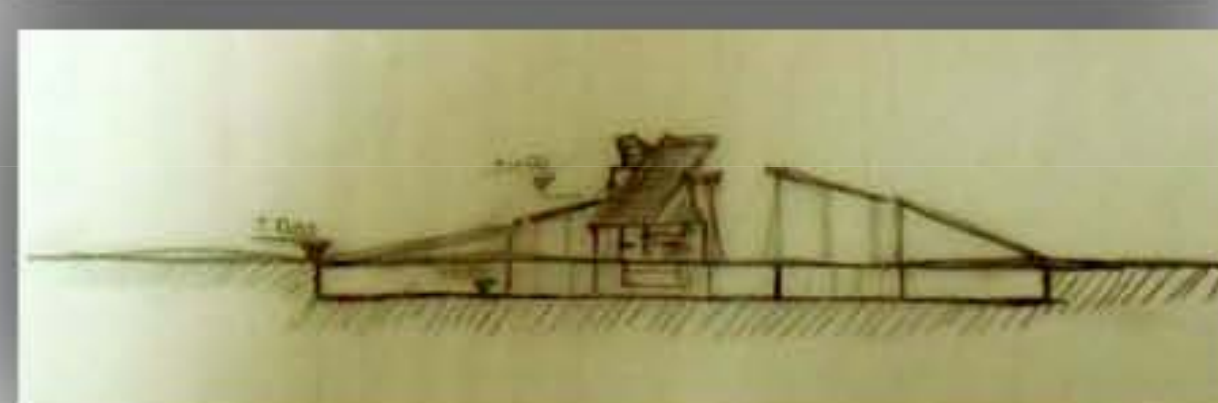
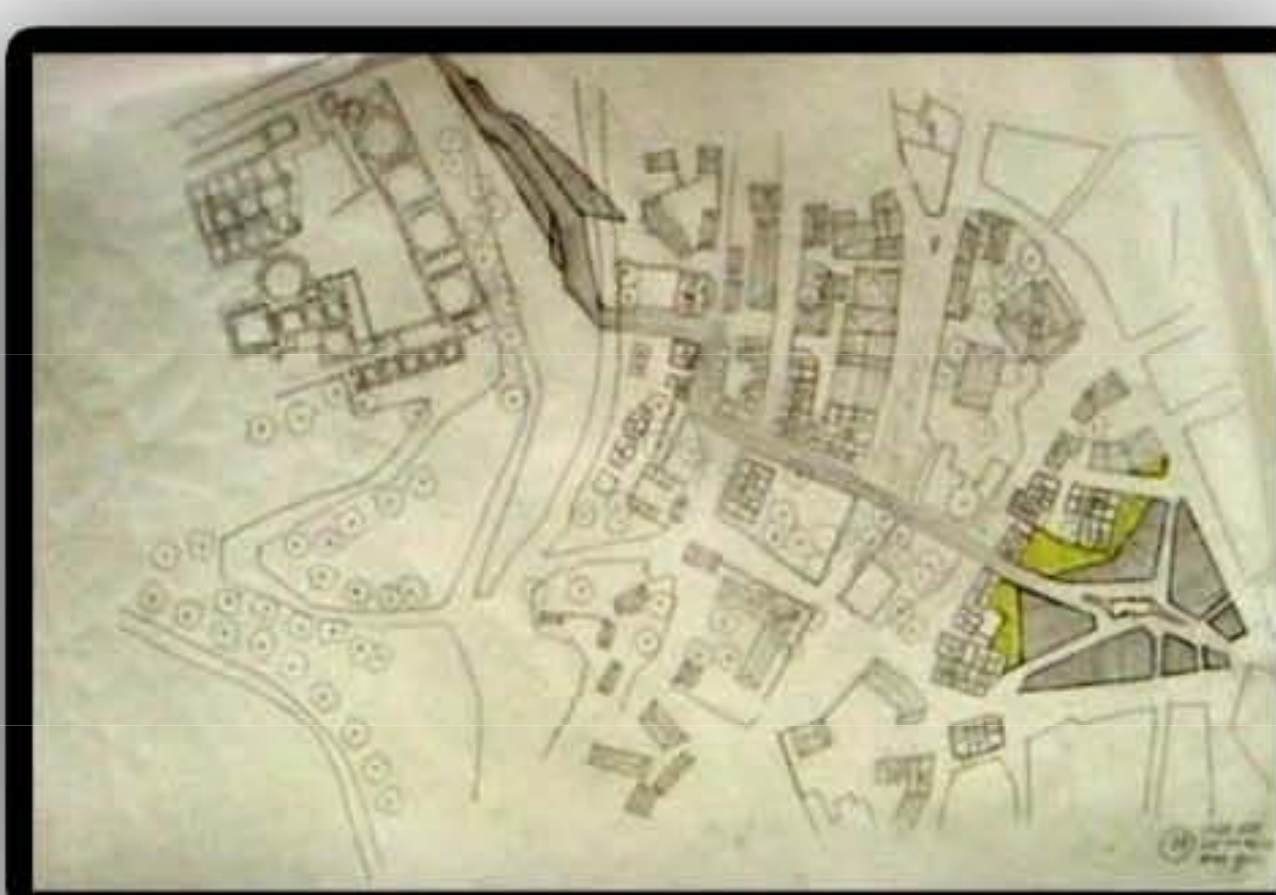


SUSTAINABILITY IN ARCHITECTURAL DESIGN IN HISTORIC CITIES BY REHABILITATION IN CASE OF SEYITGAZI, ESKISEHIR, TURKEY

2010 -2011 Summer Period _ Architectural Design Studio VII

Prof. Dr. Ruşen Yamaçlı, Assoc. Prof. Dr. Leyla Y. Tokman, Assist Prof Dr. Yüksel Demir
Research Assistant Elif Tatar, Research Assistant İnci Göldoğan

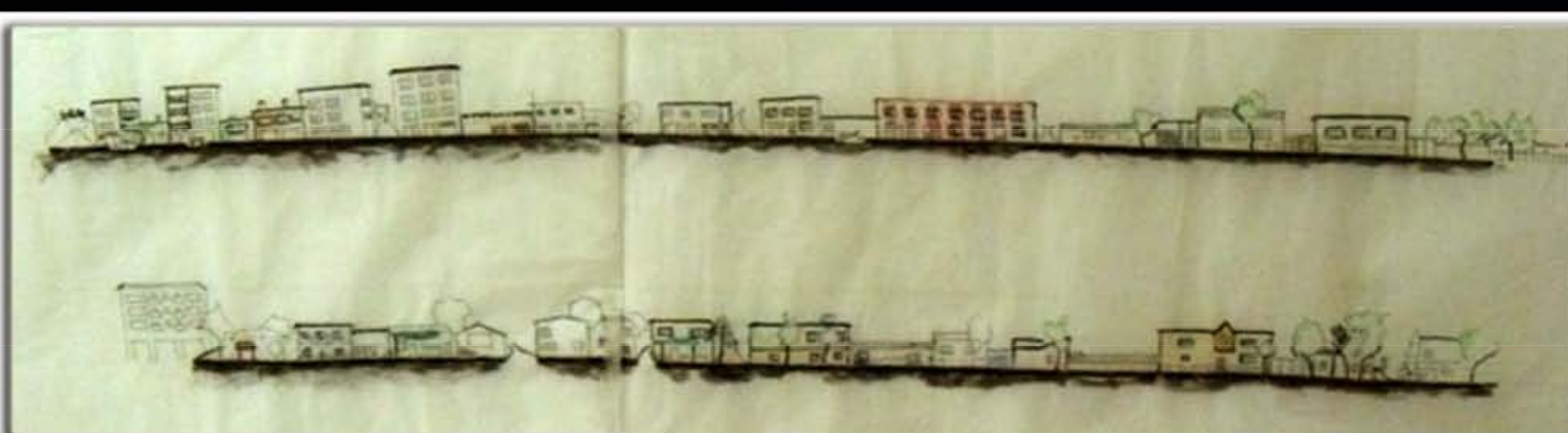
Environmental conditions re-form as a result of factors such as technology, population growth, changes in the culture of life; this situation speeds up the process of urban transformation. Some historical cities, that has been evaluated as a whole and has been indicating an organic development since ancient times, depreciate against this rapid transformation process, face the loss of urban identity and memory. Social, economic and ecological sustainability of the cities, which have important historical values, must be provided. In this process to achieve sustainability, existing texture's and existing structures' reconstruction and rehabilitation is important. Conservation of the current texture contributes to the urban transformation process by supporting sustainability of urban identity and memory.



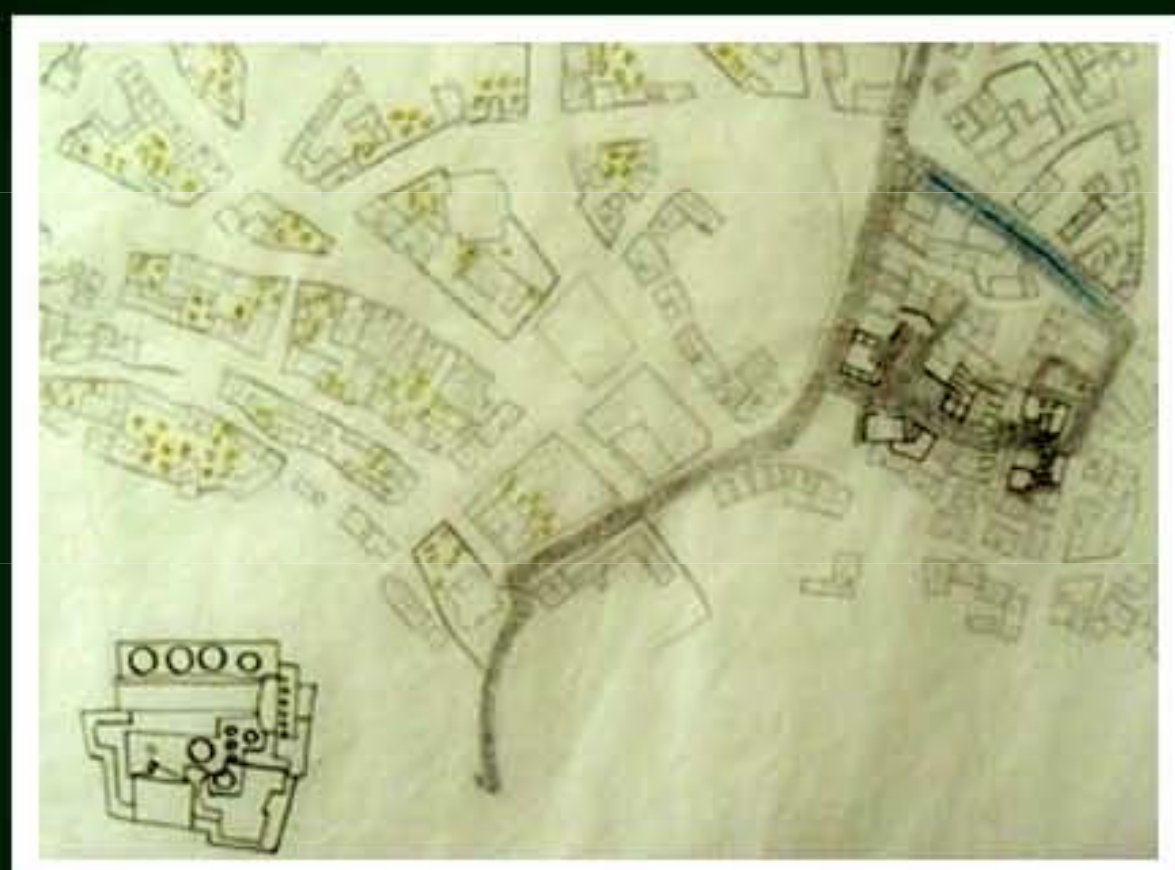
different disciplines



**Social
economic
ecological
sustainability**



Conservation of the current texture



Architectural restructuring, rehabilitation and sustainability



Sustainability of urban identity and memory.

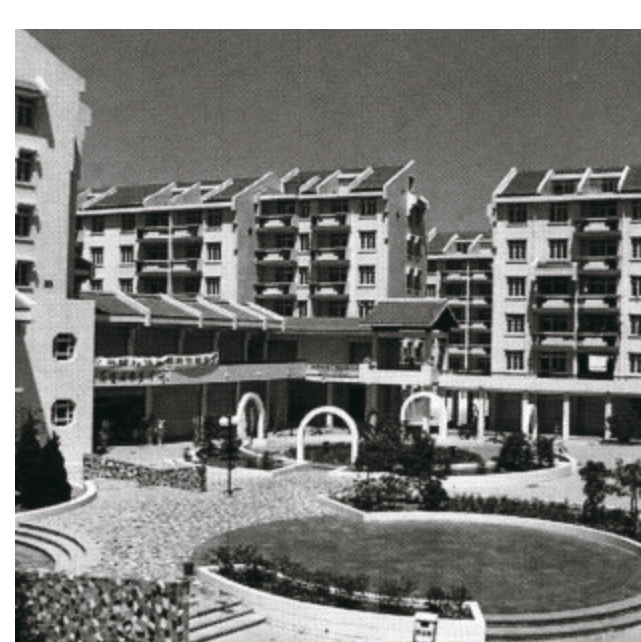


In this context, Anadolu University Department of Architecture's Architectural Design Studio VII atelier started a project about Seyitgazi settlement, which is important with its historical texture, as a case study on 2010 – 2011 summer period. Seyitgazi settlement, that is in Eskisehir-Turkey and which have intense and organic structure in terms of historical, cultural, archeological and natural values, brings very different disciplines together through architectural restructuring, rehabilitation and sustainability. Projects, prepared within atelier, developed as pre-study phase, they will be base for the future projects. Studies, that were strated in this characteristic field in the context of research, education and the application by Anadolu University in Eskisehir, guiding the department of architecture studio training and professional applications.



TRANSFORMATION AND DEVELOPMENT OF CHINESE ARCHITECTURAL COURTYARD SPACE IN THE MODERN AGE

Tan Zhu



Courtyard is the main feature of the traditional Chinese urban form. The forms of the traditional Chinese single building are not diverse. They are composed by the basic structural unit "JIAN" to form the shape of rectangle box. Following a certain cultural concept, the single buildings form a series of harmony and organic spaces by using the courtyards as an organized tool, to complete the function, for example, the family housings, temples, palaces, etc. Then all these together compose the classical Chinese horizontal urban fabric. At different ages and in different areas, due to the various ways of people's life, the scale, function, organization of the courtyards showed the corresponding changement to adapt to the needs of a variety of daily life. And they provided an useful experience for the subsequent housing in the region.

■ Since the Opium War of the second half of 19th century, western countries which finished the industrial revolution had colonized China for a long time. As a result, the western life style and its related urban architectural form arrived China and started to affect the Chinese local residence architecture. At the same time, the started of the urban modernization construction made the density of urban population increased sharply, which promoted the requirement of the high-density residence and stimulated the transformation of the horizontal low-density courtyard-style buildings. The high-density compact urban courtyard residence buildings were appeared, and the number of the storeys of their single building was gradually increased.

■ After a period of stagnation which was led by a variety of wars, the foundation of PRC started the rapid development of the new country which encouraged the people to restart to search for the appropriate urban residence form. However, with the goal of building the industrial cities, the influence of the Soviet functionalism made the line buildings becoming the main players in the urban environment throughout of China. Because of the expansion of the urban population and the reduction of the per capita area, the developmental prospect of the traditional housing was completely lost. Even the original courtyard became crowded with the confused additions, totolly destoryed the comfortable their scales.

■ Meanwhile, the integrated functional "Unit" courtyard and the mid-high rise community which was founded in the spirit of the traditional courtyard were developed. The unit always took the whole area of one block, surrounding by walls and inside which there were all the functions. It liked a mini-city located in the large one. The community followed the traditional horizontal organization style to form the small courtyards between the single buildings, and then all the construction were enclosed by the block wall. No matter the unit or the community, the main buildings inside which are all the line buildings, that made the uniform taste in all the cities of China which couldn't express the aesthetic feeling of the courtyard.

■ The reform and opening policy at the beginning of 1980s, started the urban construction and the discussion about the urban housing form again. The conception with Chinese characteristics had been emphasized for one more time, meanwhile, the new approaches and new forms which according to the local conditions were invented. For the courtyard, constructing completely copy the traditional types obviously couldn't meet the requirement of the contemporary life, new inventions of them were required. With the sort of modern spirit which was carried by the Chinese traditional courtyard itself, some high density, high intensity urban complexes appeared, which conveyed to the inhabitant the classical courtyard spirit through their modern spaces.

THE END: After 2000, the development of Chinese urbanization was completely speeding up. Almost every city, no matter big or small, set up the master plan till 2020 to transform themselves a whole new modern city. In the post-industrial and information age, plenty of advanced technologies change the style of the daily life. Under this new environment, urban life means the new space organization relationship, and the courtyards will performance the new sustainable shapes to service the inhabitant's lives.



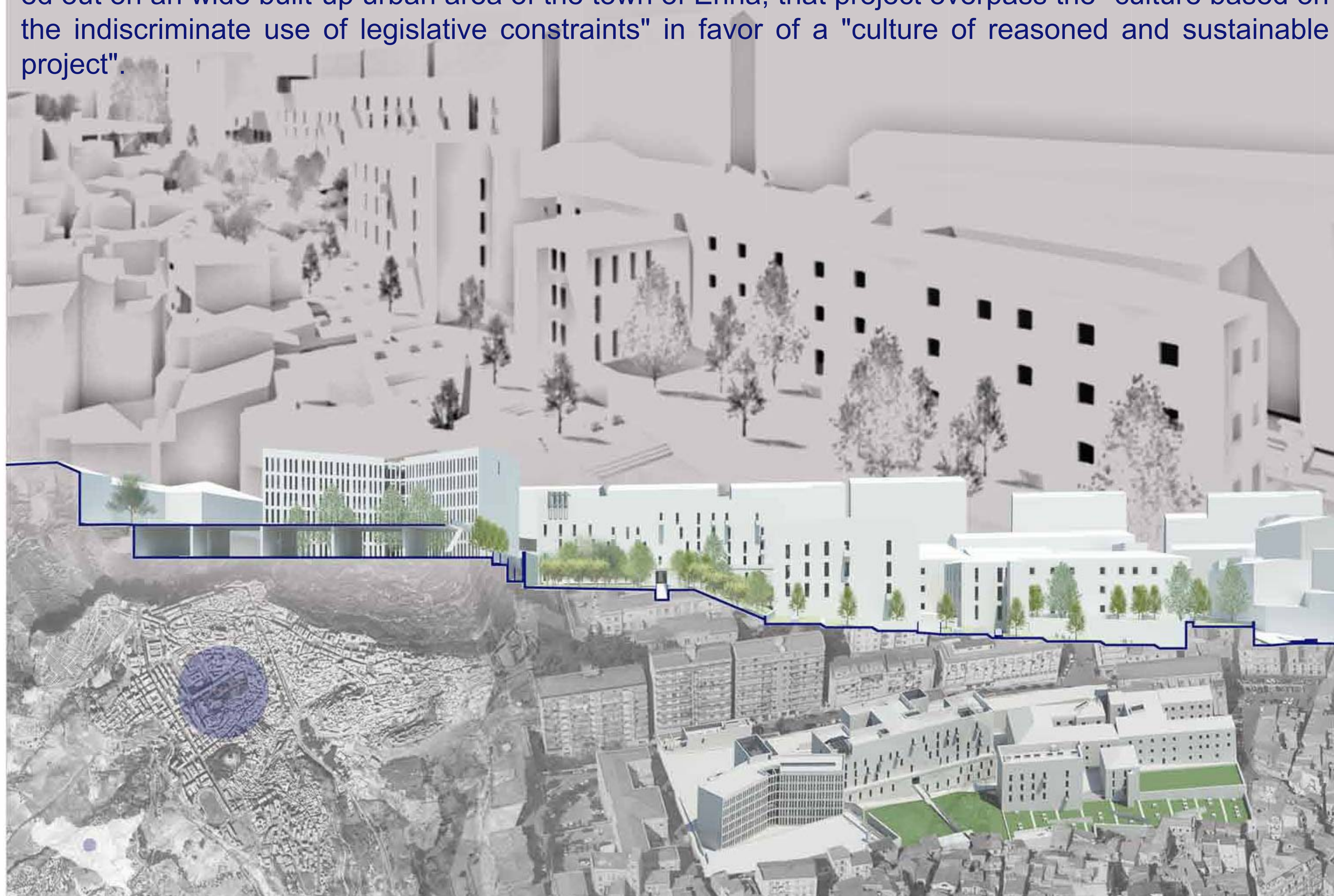
FROM THE KNOWLEDGE PROCESS TO THE REVITALIZATION PROJECT: THE CASE STUDY OF THE OLD HOSPITAL COMPLEX IN ENNA

Stefania Zuccarello_Università degli Studi di Enna "Kore"_stefaniazuccarello@gmail.com
in collaboration with the Laboratory of Restoration_UKE_responsible Prof. Ing. Antonella Versaci

Rehabilitation and regeneration activities in the inherited built environments represent a great opportunity for stimulating introspective reflections on the city and its transformations. Running away from the traditional dichotomy of "preserve tradition-destroy it", based on the idea that cultural heritage has to be respected as an essential component for sustainable development, these reflections can be very useful to establish proper intervention strategies. To this end, it is necessary to look back, in the first instance, to all the changes that over time have accompanied the life of the "place". However, this knowledge process cannot be limited to documentary investigations (albeit necessary), because the analyzed sources often provide only partial answers on the origins, transformations and changing processes of the pre-existing architectural environment. Furthermore, the gathering of metric, chromatic and material data, as well as of any other relevant information has to take into account the essential need to formulate, before the intervention, a survey project. Based on a critical process and in close connection with the project purposes, this planning process should make use of all opportunities offered by today's modern acquisition and restitution technologies.



The use of virtual models, in fact, can provide a better understanding and an objective representation of the "reality". In particular, the most advanced laser scanning methodologies offer the opportunity to create, according to the criteria of cost and time saving, a rich database of information able to document, with remarkable accuracy, the complex geometry of the considered buildings; points clouds from which to obtain orthophotos and perspective representations useful to highlight features in itself difficult to recover using traditional methods. Starting from these assumptions, aware that architecture should be seen not as immutable but as an asset changing in accordance with successive thoughts and reflections, it is possible to develop conservation and planning activities necessary to ensure architecture evolution with the full respect for the genius loci. This poster aims at summarizing a research work carried out on an wide built-up urban area of the town of Enna, that project overpass the "culture based on the indiscriminate use of legislative constraints" in favor of a "culture of reasoned and sustainable project".





Tema 2

History, Theory and Criticism

of Architecture

and Urban Design



**POLITECNICO
DI MILANO**



**UNIVERSITÀ DEGLI STUDI
DI GENOVA**

ARCC

**ARCHITECTURAL RESEARCH
CENTERS CONSORTIUM**



**EUROPEAN ASSOCIATION
FOR ARCHITECTURAL EDUCATION**



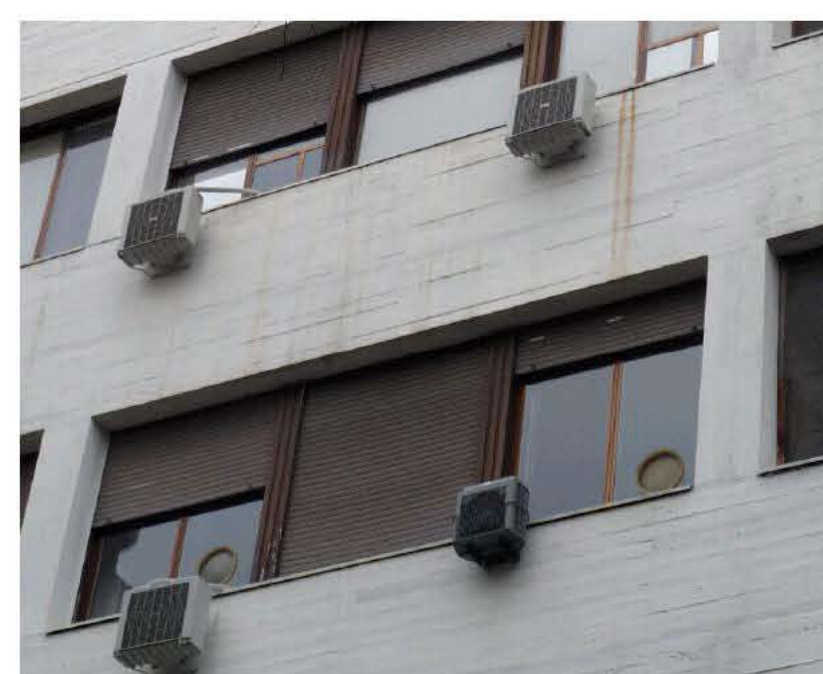
Tema 2 History, Theory and Criticism of Architecture and Urban Design

Felicità Forte
Politecnico di Milano, Italy

To detect, design and develop empathy in urban habitats

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Today the task of city building must address environmental and social issues.

Design based on outward appearance and aesthetics is not enough to fulfill the needs required by sustainability. Neither is technology alone sufficient.

Urban architecture has to include an understanding of human behaviour, the development of empathy and cooperation, and the means to connect to other species that share our urban habitats.

New research by many of those who study humans, primates and other species has turned to cooperation, altruism and the development of empathy in human and interspecies bonding (Berreby 2005; Brizendine 2006; DeWaal 2006; Wright 2000). There are claims that it is **sociality, our tendency to bond with others that gave us language development and much of how our minds work**. In a future where humans will have to construct lifestyles based on caring for the earth, what does it mean to city-build and problem-solve, with this new knowledge of human nature in a changing ecological context (Nassauer et al. 2009; Singer 1981)? Is it possible to **design urban landscapes that promote attachment and empathy between people, with the landscapes, and with other species?**



One of the first approaches to rethinking the urban landscape is to find out how people already perceive it. **How do the users understand the places of the city in which they live and move?** Do they experience, in their day-to-day use of the human constructed habitat, increased trust of other people and contact with the natural environment? An analysis of the **ordinary perception of the cityscape is an essential tool** for those with decision making power in municipalities and other levels of government. The European Landscape Convention acknowledges this issue and notes that human perception of the landscape is “a key element of well-being and an important part of the quality of life”.

According to Nassauer, the perception of the urban landscape is determined by social values often reinforced by the design of the city space. “Culture and landscape interact in a feedback loop in which **culture structures landscapes and landscapes inculcate culture**” (Nassauer, 1995: 230). Because the urban landscape must function ecologically as well as socially and culturally (Meyer, 2008), we need to investigate how the experience of the city can lead to recognition of, empathy with, and care for the environment and people. Understanding **the feedback process among design, perception and behaviour is critical for sustainable design** of human settlements. It is within the urban landscape that future sustainability will be worked out and made visible and desirable.



Planners, architects and landscape architects should thoroughly **study and use methods (established or emerging) to detect and design for the enhanced empathy and cooperation**, that support the inseparability of the biological and cultural dimensions of the city. This goes beyond participative design processes: it's a drive to **design with all the senses** (smell, hearing, haptic senses, walkability, touchability), to use **experiential practices to assess and interpret** urban spaces (sketching, walking, non-expert mapping, photographing), to consider and promote the **informal use of the city** (“sitting on”, “playing with”, “socializing in” and “learning from” the city), to encourage simple and low cost practices of **community self-construction**, and to **learn from the historical social management** of urban spaces and infrastructure.





Tema 2 History, Theory and Criticism of Architecture and Urban Design

Felix Schmuck
HafenCity University, Hamburg, Germany



The Bond between Urban and Architectural Transformations and their Times.

The structure of every city is a result of a continuous metamorphosis. In contrast to a house, a city is always unfinished and constantly being altered and extended. The processes of change in a city proceed iteratively, that is, each developmental step in the urban fabric relates to the preceding one. In all this, parts of the urban structure are remodelled, but others remain visible under the layers of spatial accretion and take on a character of permanency. This means that a current cityscape always includes past stages of development:

We encounter history as spatial structure.

The capacity of a city to lay down the passage of time constantly in the form of built layers is only made possible by the invisible bonds of material and time in architecture. As a structure, a house is always the result of a constant negotiation between the essential nature of architectural activity and how its physical reality is bound up with time. Both disciplines, architecture and urban planning, are hence time and time again forced to renegotiate the impact of the new on what already exists.

At first sight, the principle of the new not being allowed to disturb a city's preservation values does seem logical. However, the historical context conceals one of urban transformation's specific conflicts: article 12 of the Venice Charter, rooted as it is in the belief that every age creates its own forms, was already stipulating in 1962: "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must

be distinguishable from the original so that restoration does not falsify the artistic or historic evidence." This stipulation thus forbids any possibility of what is 'not new' as something tantamount to historical imitation or counterfeit.

At the same time, as a counter-reaction to the dictatorship of speed and – according to Aldo Schiavone – to the concomitant loss of the notion of 'future', a desire for presenting history as a formal component of a city is growing. The new forms of history materialise in cities in order to act as sites for the yearnings of a society moving faster and faster but with no sense of place.

Neither houses nor cities can avoid the question of their respective involvement with time. The conflict is, much rather, an immanent component of every form of urban transformation. It cannot offer any answer taking the focus of an individual discipline. The answer to it can only be offered structurally: architecture and cities can respond to the demands to express their times only through a consciousness of their contradictory nature in the collaborative work done by the disciplines.

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1f Frankfurt | ENS Architekten
2g Bremen | Jacob Ephraim Polzin
3e Staaken | Hans Kollhoff
4a Paris | Pierre Le Muet
5d Bremen | N.N.
6c Marburg | Oswald Mathias Ungers
7b Frankfurt | Morger & Dettl



Tema 2
History, Theory and Criticism
of Architecture and Urban Design

Julia Yanuskina
Volgograd State, University of Architecture
and Civil Engineering (VSUACE), Russia

Julia Yanushkina,
Ph.D. Architecture, VSUACE, Russia

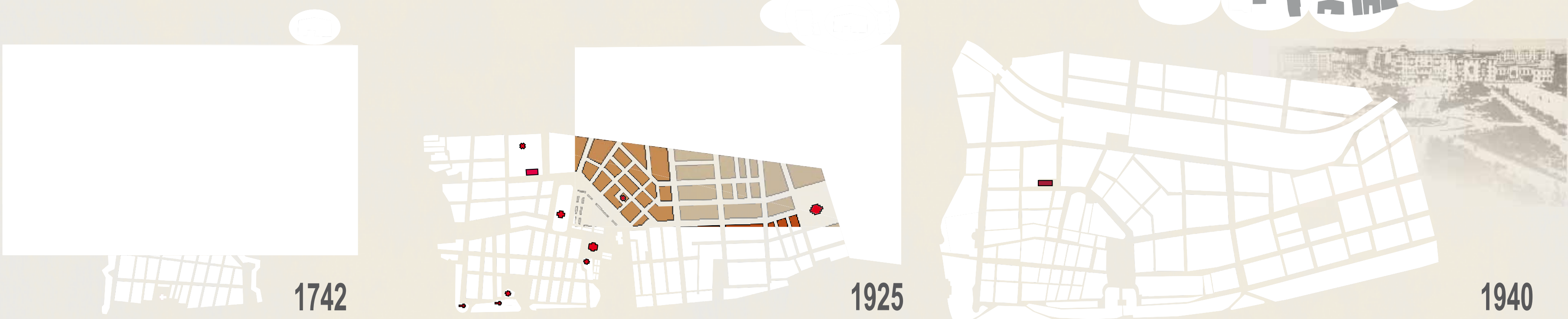
VOLGOGRAD

THE ARCHITECTURAL HERITAGE OF THE "TOTALITARIAN" PERIOD

THE DEVELOPMENT OF THE CITY CENTER. THE FACTUAL PLANS

FORMATION OF THE BASIC
SPATIAL PATTERN

REPRODUCTION OF THE BASIC SPATIAL PATTERN



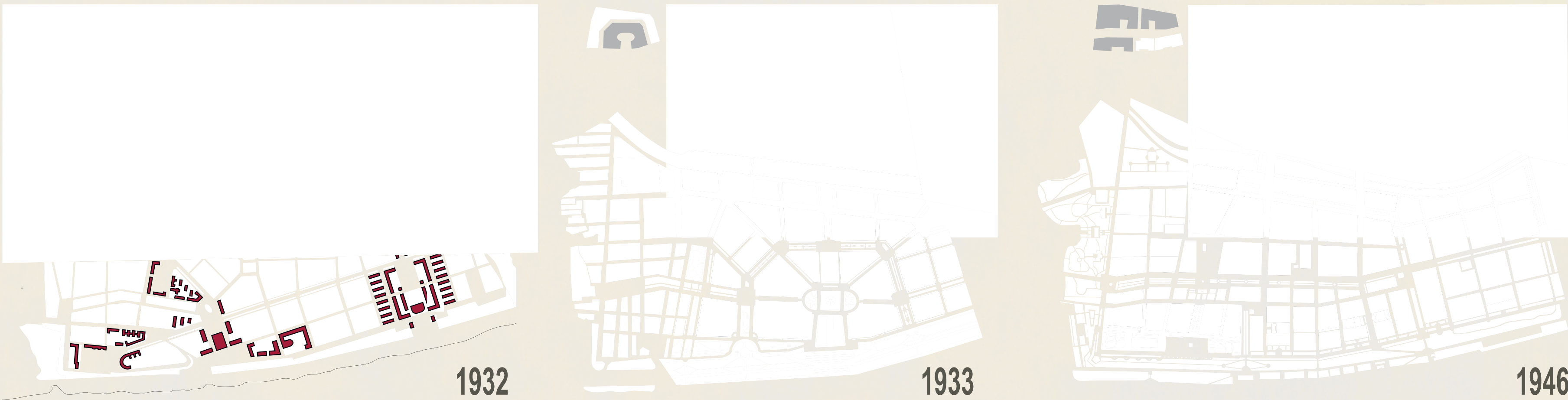
THE DEVELOPMENT OF THE CITY CENTER. THE PROJECT PROPOSALS

REPRODUCTION OF THE BASIC SPATIAL PATTERN

"CITY-LINE"

"CITY-ORGANISM"

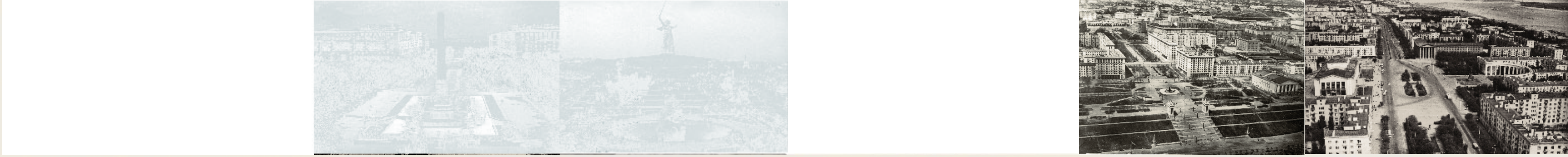
"CITY-MONUMENT"



FIGURATIVELY--SPATIAL STRUCTURE OF STALINGRAD-VOLGOGRAD

THEME "THE SACRED CENTER"

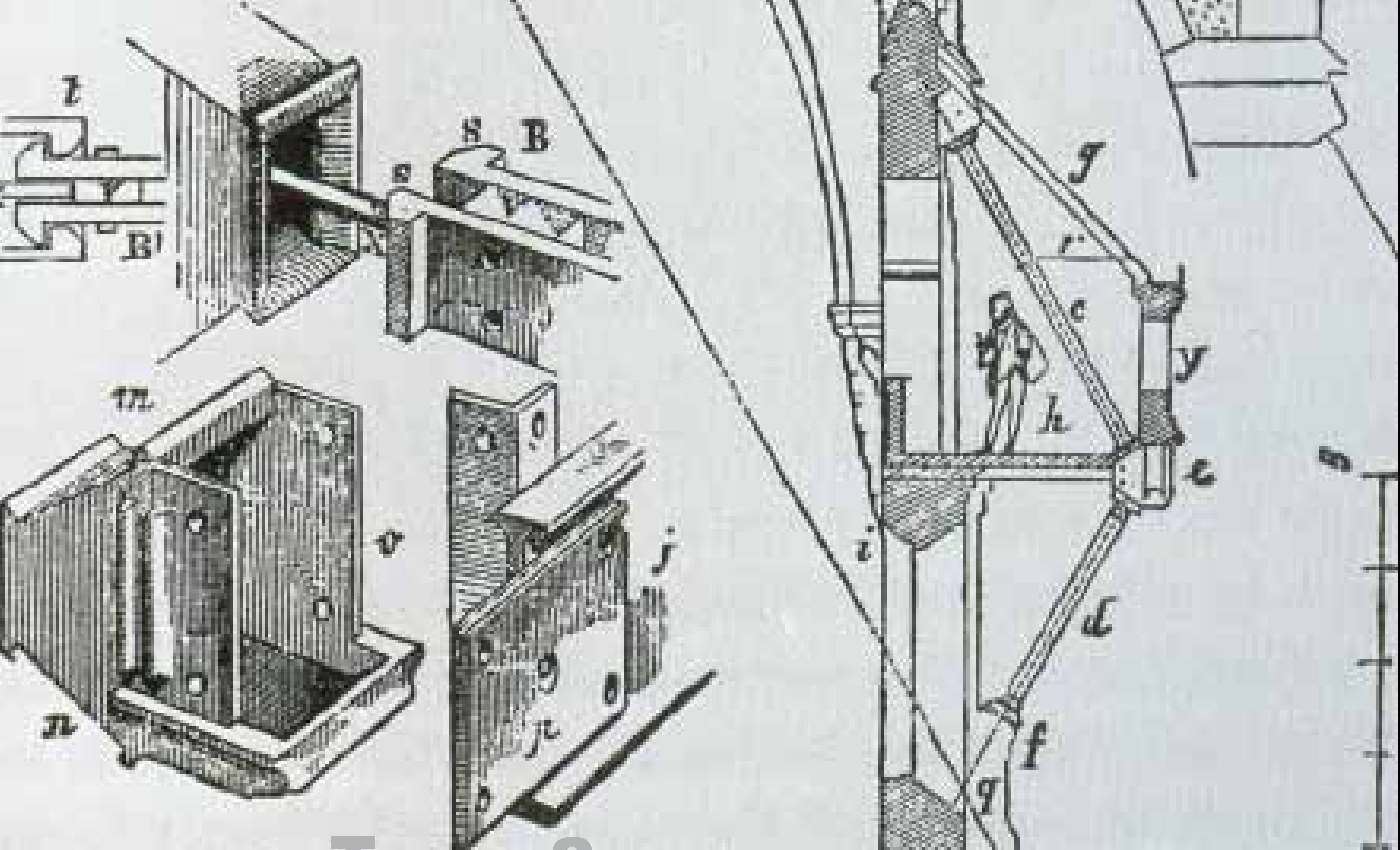
THEME "THE WAY"



THEME "GATES"

THEME "BORDER"





Tema 3

Criticism, Conservation and Restoration



**POLITECNICO
DI MILANO**



**UNIVERSITÀ DEGLI STUDI
DI GENOVA**

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**ARCHITECTURAL RESEARCH
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Panamá Viejo: Transformation from village to city

Silvia I. Arroyo D.

PhD Preservation of Architectural heritage - PoliMi, Senacyt Scholar, Patronato Panamá Viejo

This poster is the result of an interdisciplinary team work and years of experiences at the archaeological site of Panamá Viejo, in the center of Panamá city (Rep. of Panamá). It was the first European settlement on the American Pacific Coast. The title “From village to city” it is also the name given to a permanent exhibition and a book, which was the product of this work, that like this paper tells the history -or story- of Panamá Viejo. At this moment, there are **5 distinguishable transformations in the history of Panamá Viejo**:



1. **Before 1519**, Panamá was a small coastal native village. The small settlement was engaged in fishing and it believed to be linked politically to a bigger town. Most of the remains are still unexcavated.

2. **Between 1519 and 1671 (image 1 and 2)**, the city was founded and it became an strategic point of interest in the region. Panamá was designed according the instructions of the King of Spain and had a total surface of approximately 50 Hectares and around 8000 people. It continued to prosper and influence interchange in the region until 1671 when Henry Morgan and his pirate army attacked and plundered Panamá.



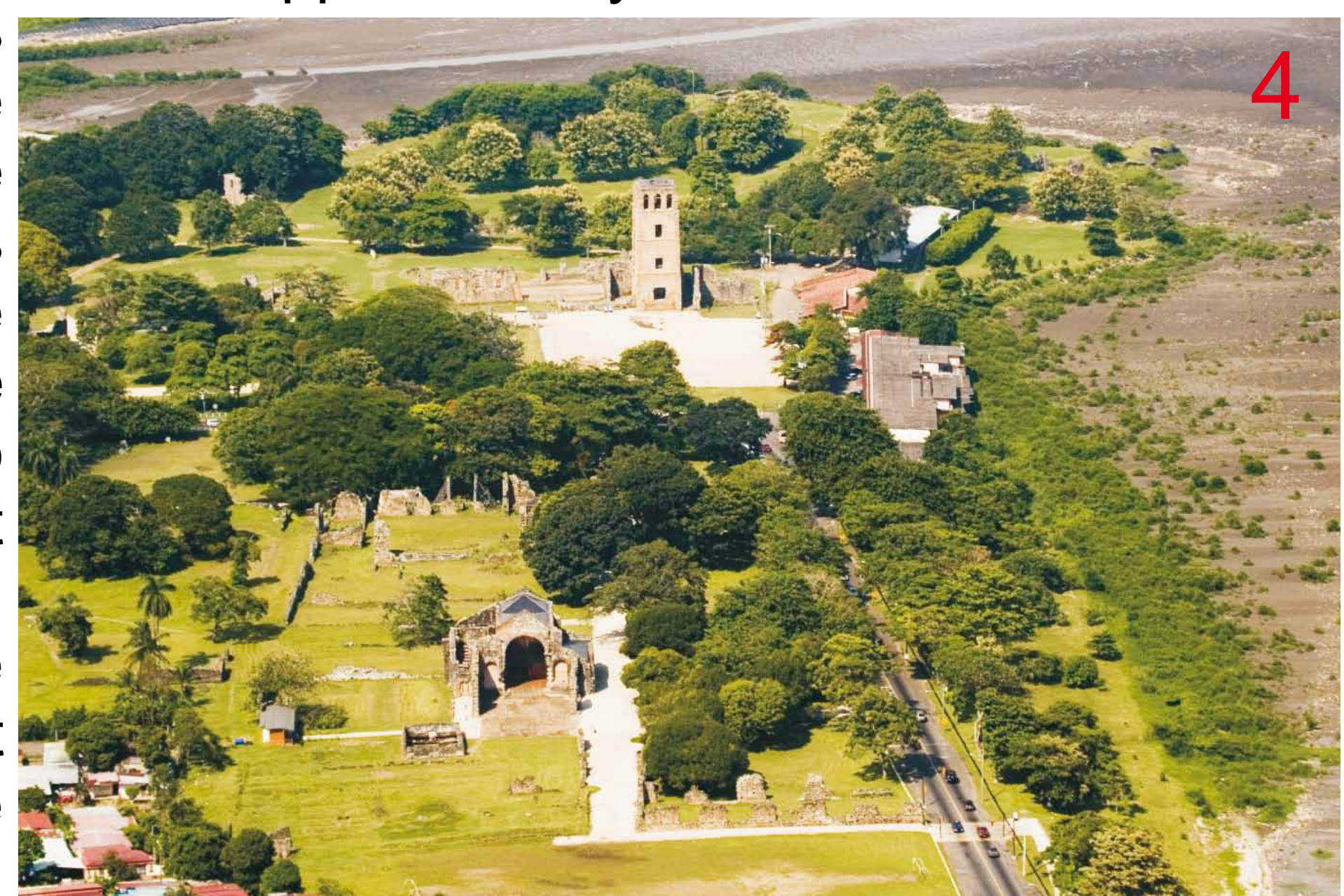
3. **After 1671 (image 3)**, what remained of the city, now called Panamá Viejo (Old Panamá), was abandoned and reduced to ruins. Parts of the city were used as a source of cut stone quarry for the building of a new settlement. During the 18th century through the end of the 19th century Panamá Viejo became interesting for foreign visitors who gave fantastic and romantic descriptions, quite common at that time.

4. **First part of the 20th century (image 3)**, in 1912 Panamá Viejo was designated the first “Public Monument” of Panamá. During this



period and in the following 20 years of the 20th century, the capital continued to grow. In the 1950s the neighborhood of Panamá Viejo took shape around the ruins and Vía Cincuentenario was built as part of the 50th anniversary of republican life. In 1976, Panamá Viejo was declared a monumental complex.

5. During the **second part of the 20th century (images 4 and 5)** the site has been managed by different institutions, until Patronato Panamá Viejo was founded in 1995 with the mission to preserve the site. In 2003, it was inscribed as a UNESCO World Heritage site and also as an extension of the Historic District of Panamá, with a surface of approximately 28 Hectares.



Panamá developed into an important city in the Americas for the Kingdom of Spain and the rest of the world in the colonial period, due to its strategic position along the coast of the Pacific Ocean. Today, Panamá continues as an strategic coastal location along the Americas for the rest of the world. Panamá Viejo is an archaeological site in the middle of a growing and modern metropolis. Due to its abandonement, certain portions of the city were kept intact. There are the remains of the colonial period combined with the archaeological vestiges of the pre Hispanic era. It is an interesting overlay of elements that mixes the urban and the coastal landscapes with the archaeological ruins to create an outstanding panorama.



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1. Castillero Calvo, Alfredo. “Sociedad, economía y cultura material: historia urbana de Panamá la Vieja”. Imprenta Alloni. Argentina, 2006. 2. Fitzgerald, Carlos. “Cien años de monumentos en Panamá” seminario “Enfoques metodológicos sobre la restauración: Panamá, Italia, México y Puerto Rico”. Panamá, 2003. 3. Patronato Panamá Viejo. “Panamá Viejo: de la aldea a la urbe”. Editorial Patronato Panamá Viejo. Panamá, 2006. 4. UNESCO World Heritage Centre web site: <http://whc.unesco.org/>

Images

1. Plan of Panamá city in 1586 by Antonelli, image from “Panamá Viejo: de la aldea a la urbe”. 2. Hypotetical model of the town around 1671, photograph by Patronato Panamá Viejo. 3. Panamá Viejo in 1912, image from “Panamá Viejo: de la aldea a la urbe”. 4. A view of the archaeological site and surrounding communities, photograph by Patronato Panamá Viejo. 5. Aerial view of the archaeological site of Panamá Viejo (aprox. 2002), by Jean C. Henry.

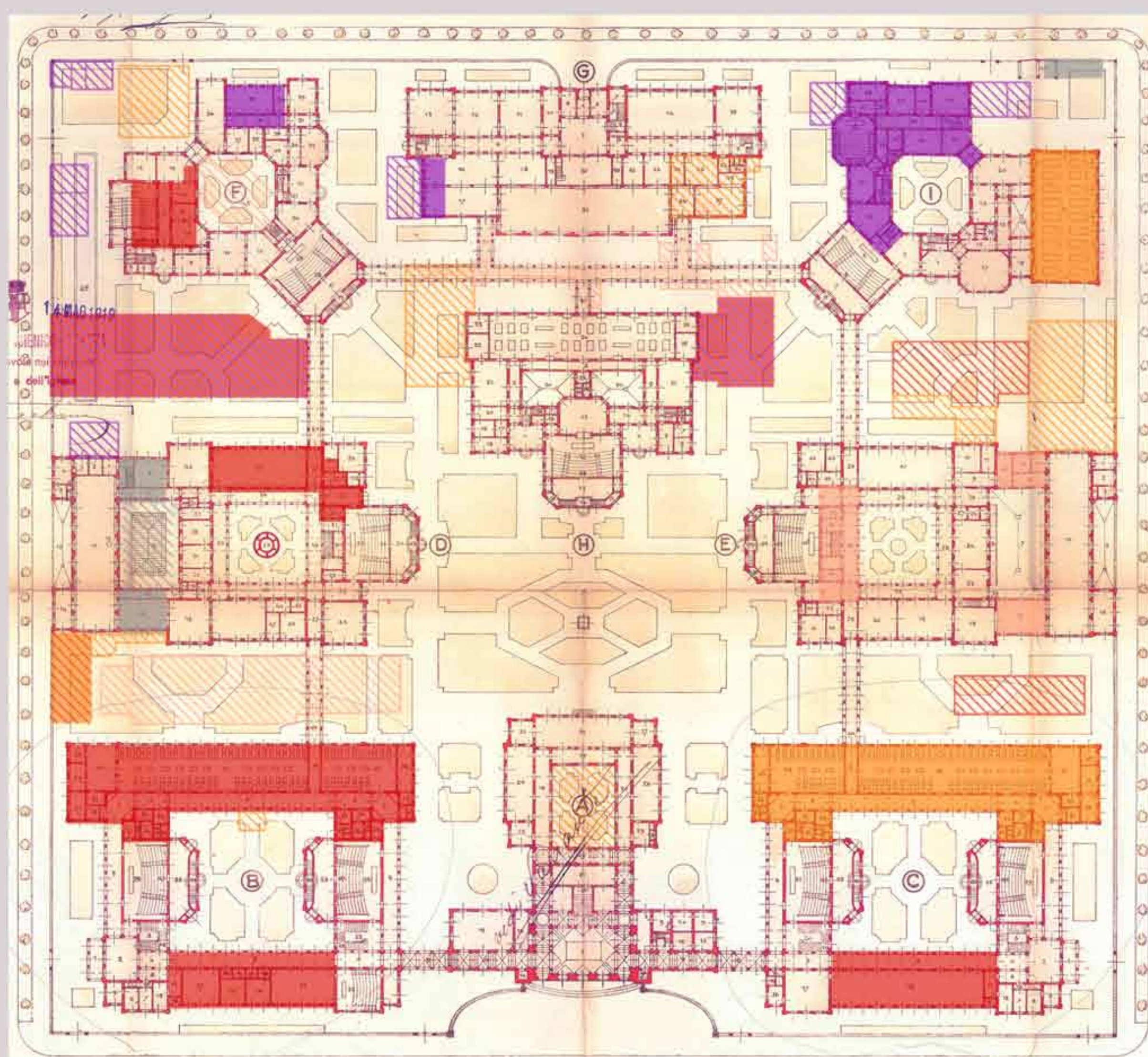


THE POLITECNICO CORE CAMPUS IN MILAN: BUILDING, TRANSFORMATIONS, PRESERVATION

Laura Balboni¹, Paolo Corradini²

¹ Research fellow, PhD in Preservation of the Architectural Heritage, Politecnico di Milano

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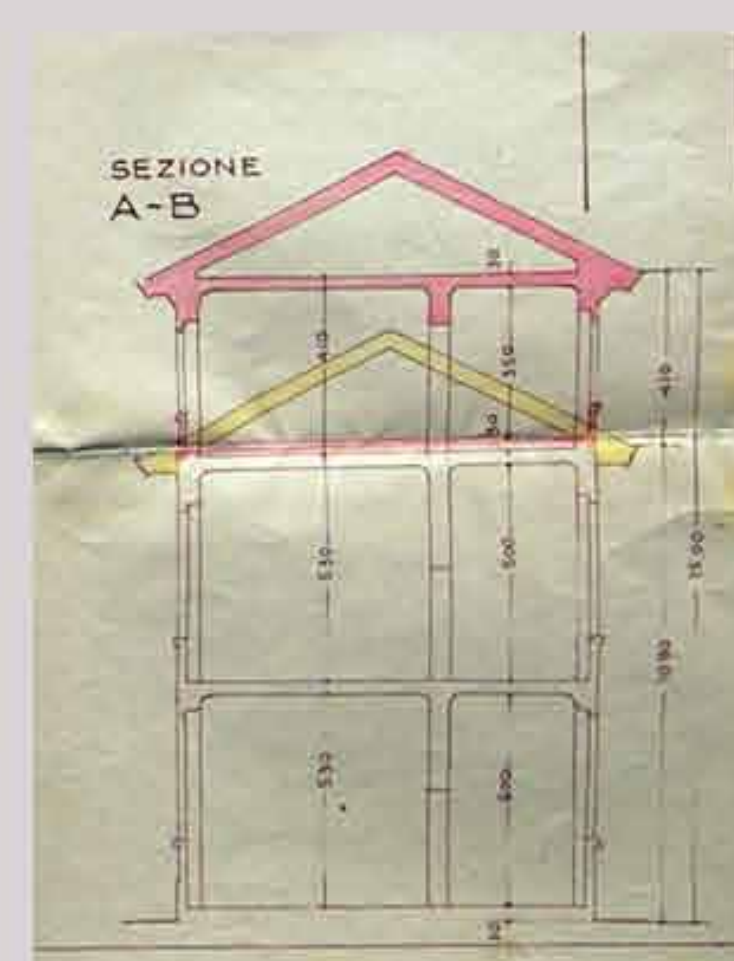
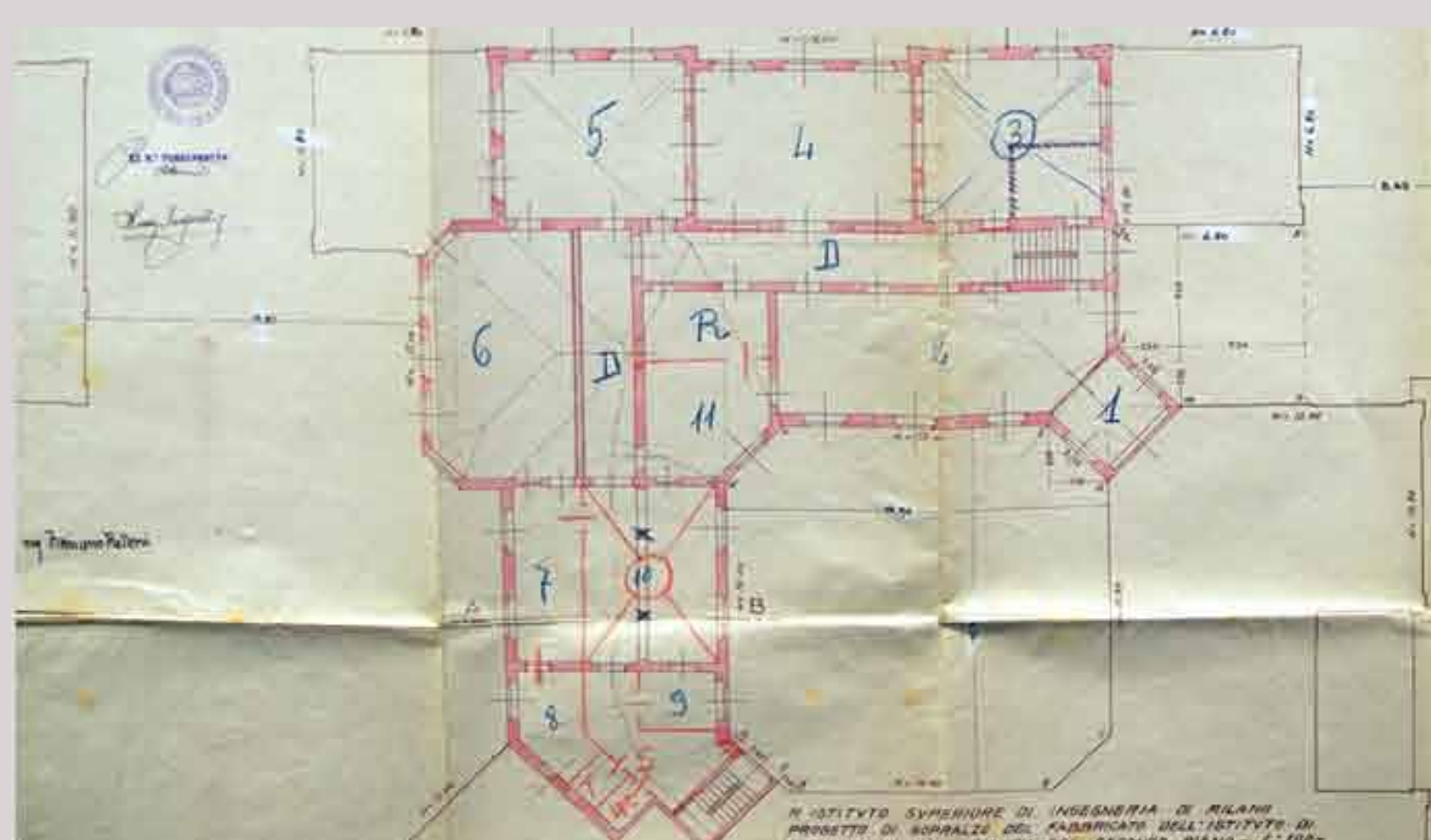
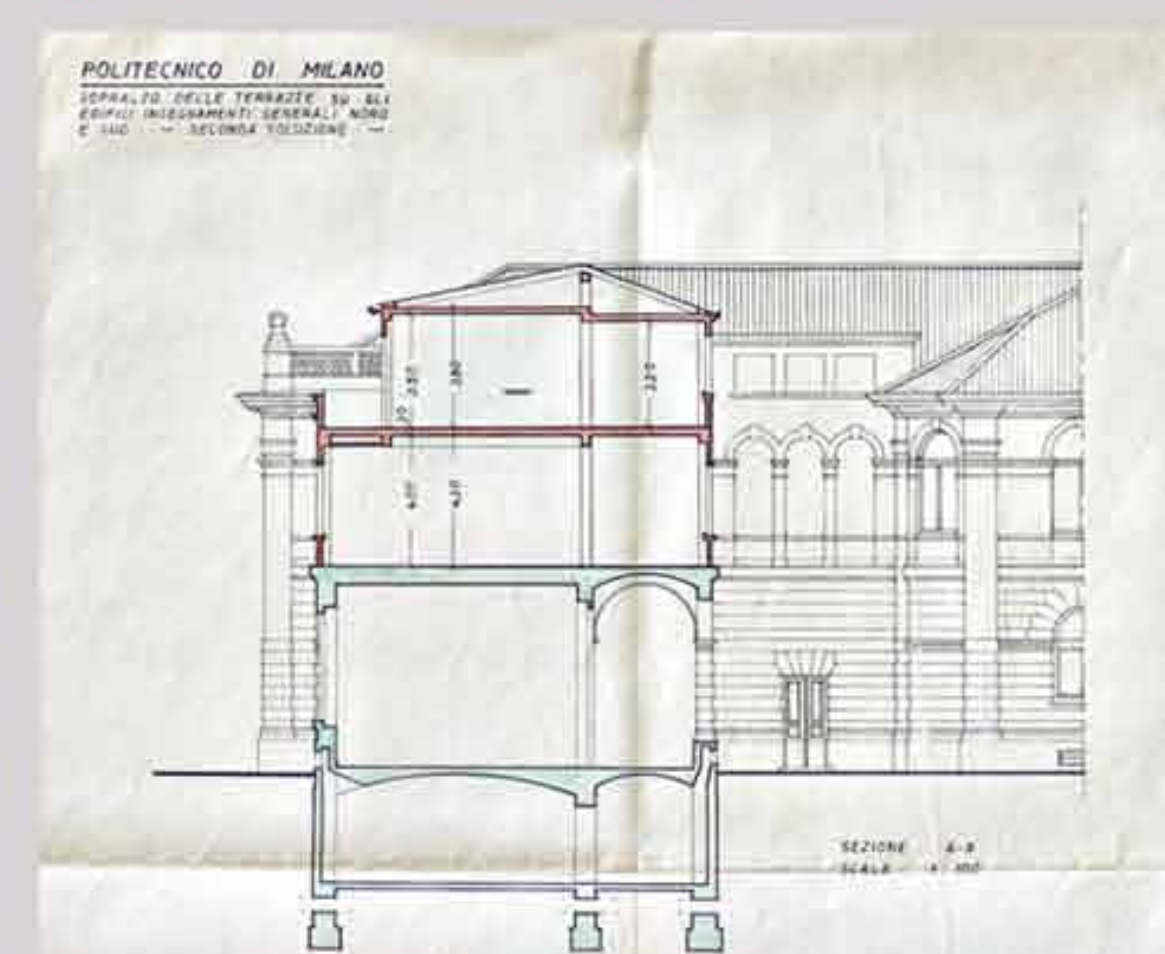
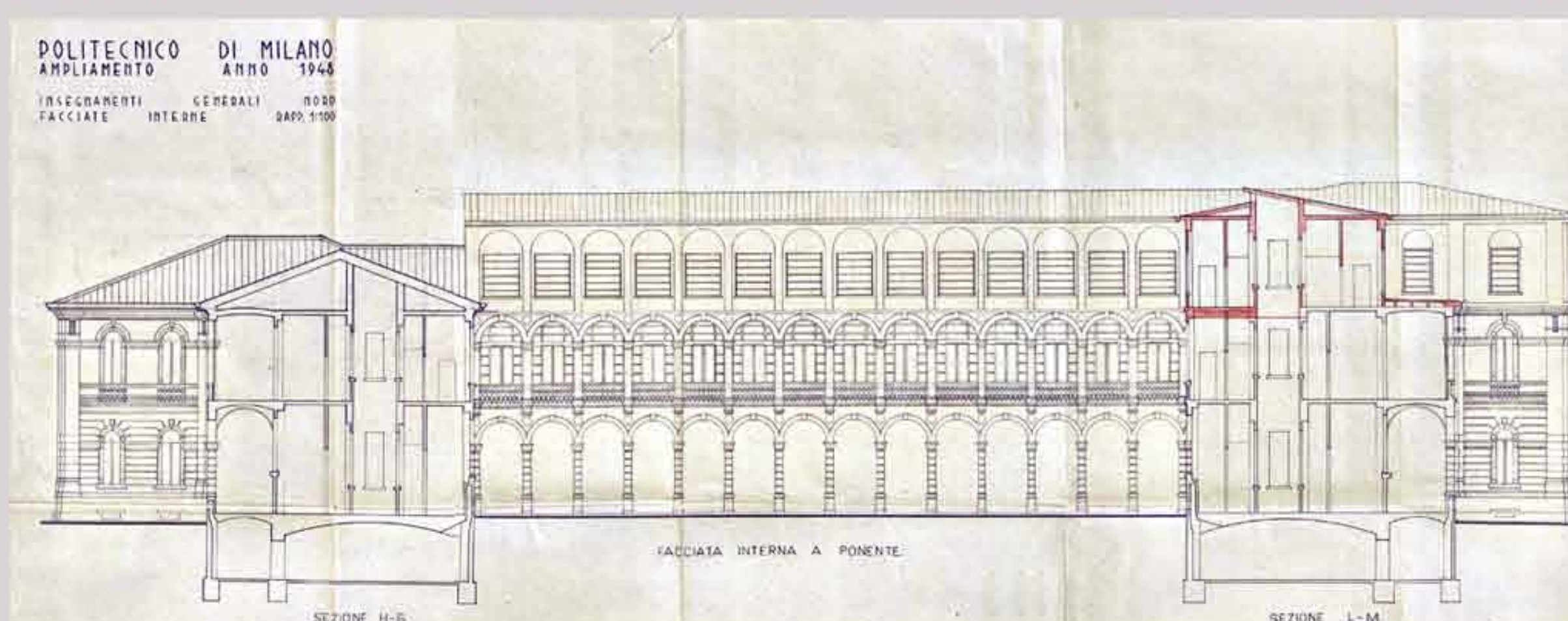


The building of a new part of the city:
Città studi under construction (1920c)

Location of the main phases in the
building and raising in comparison
with the masterplan of 1919:

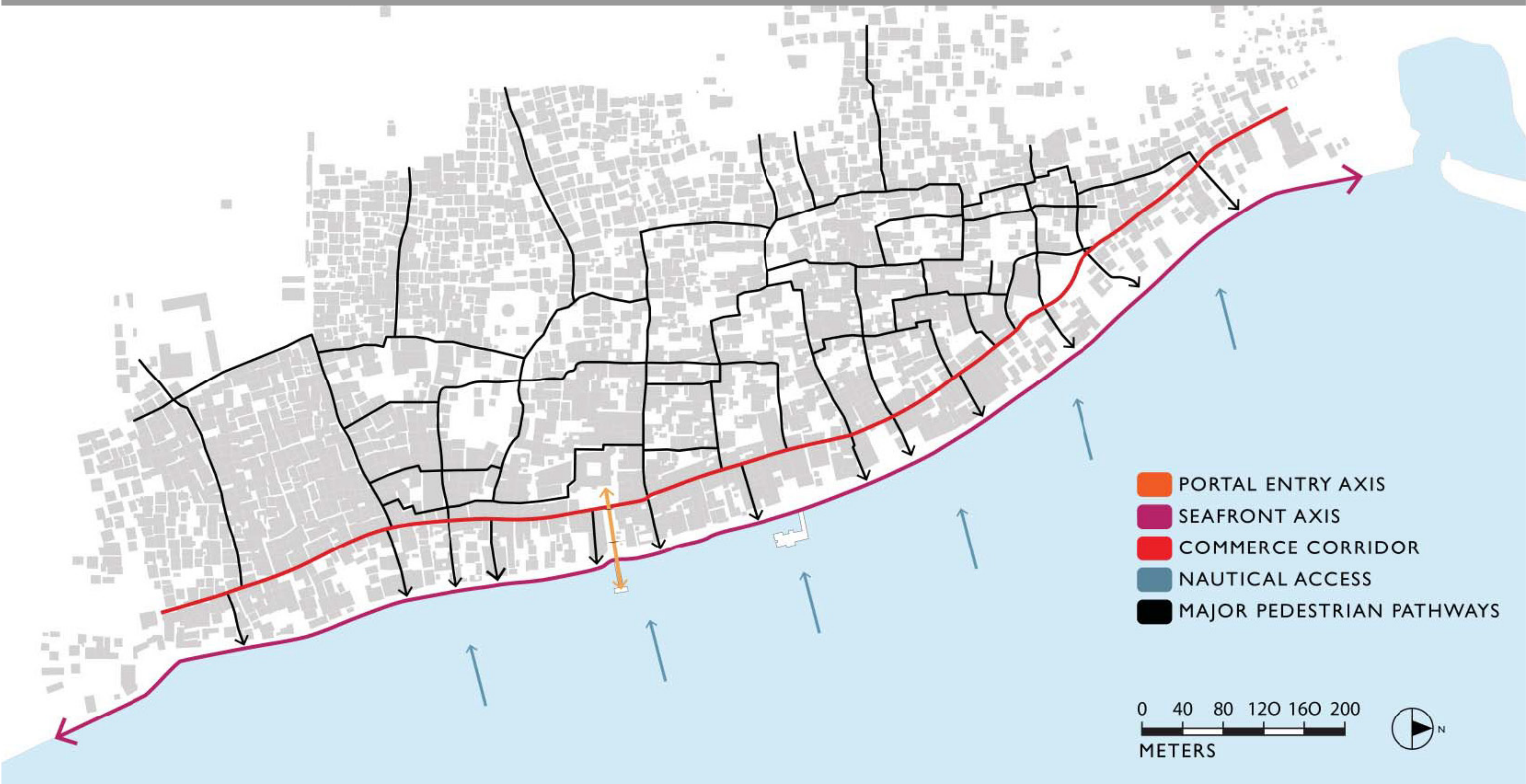
- New buildings
- Raisings
- First interventions (1927-1939)
- Additions in the post-WWII period (1946-1955c)
- Interv. during the 1st campus enlargements (late 50s-60s)
- Post 1970
- Uncertain dating

The Politecnico core campus, since its building in the 20s within the project for a self-sufficient area for higher education, had a decisive effect upon the character of a part of Milan that was still predominantly rural. As a result of the increasing needs of spaces for the didactics and the research over time, there was continuous intervention upon the surroundings and the campus, transformed by new buildings, raisings, reforms. The archival exploration, with a careful comparison with the existing pavilions, gives back the sequence of construction and the varieties of materials and structures which reflect different moments in the history either of the *Città studi* and of architecture and urban-planning within the city. This knowledge will play a decisive role in defining any programme for intervention in order to improve the efficiency of the structures (e.g. energy efficiency; structural stability) whilst preserving their quality and character, that is, protecting them as expressions of our cultural heritage. Sections of project outlines for raisings of the East wing of *Insegnamenti generali nord* (1948) and of the main front towards L. da Vinci square. Below, the plan for a floor added in the pavilion of *Elettrochimica*: plan, section and façade detail.

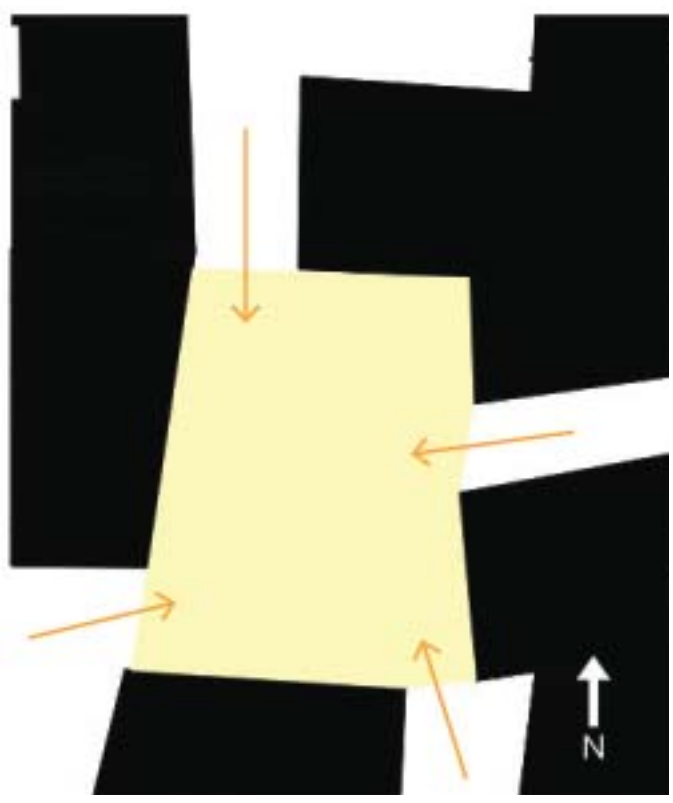
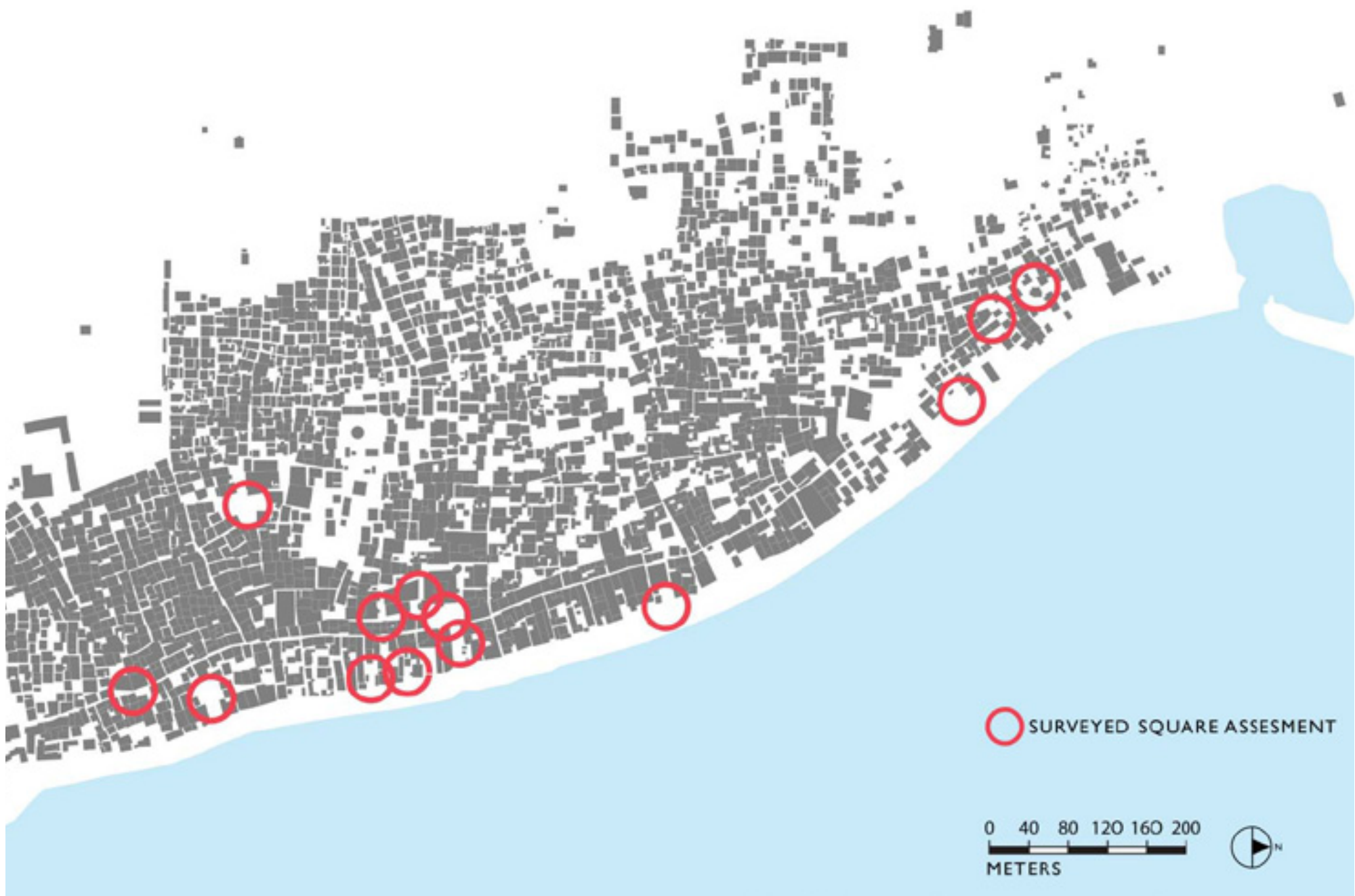
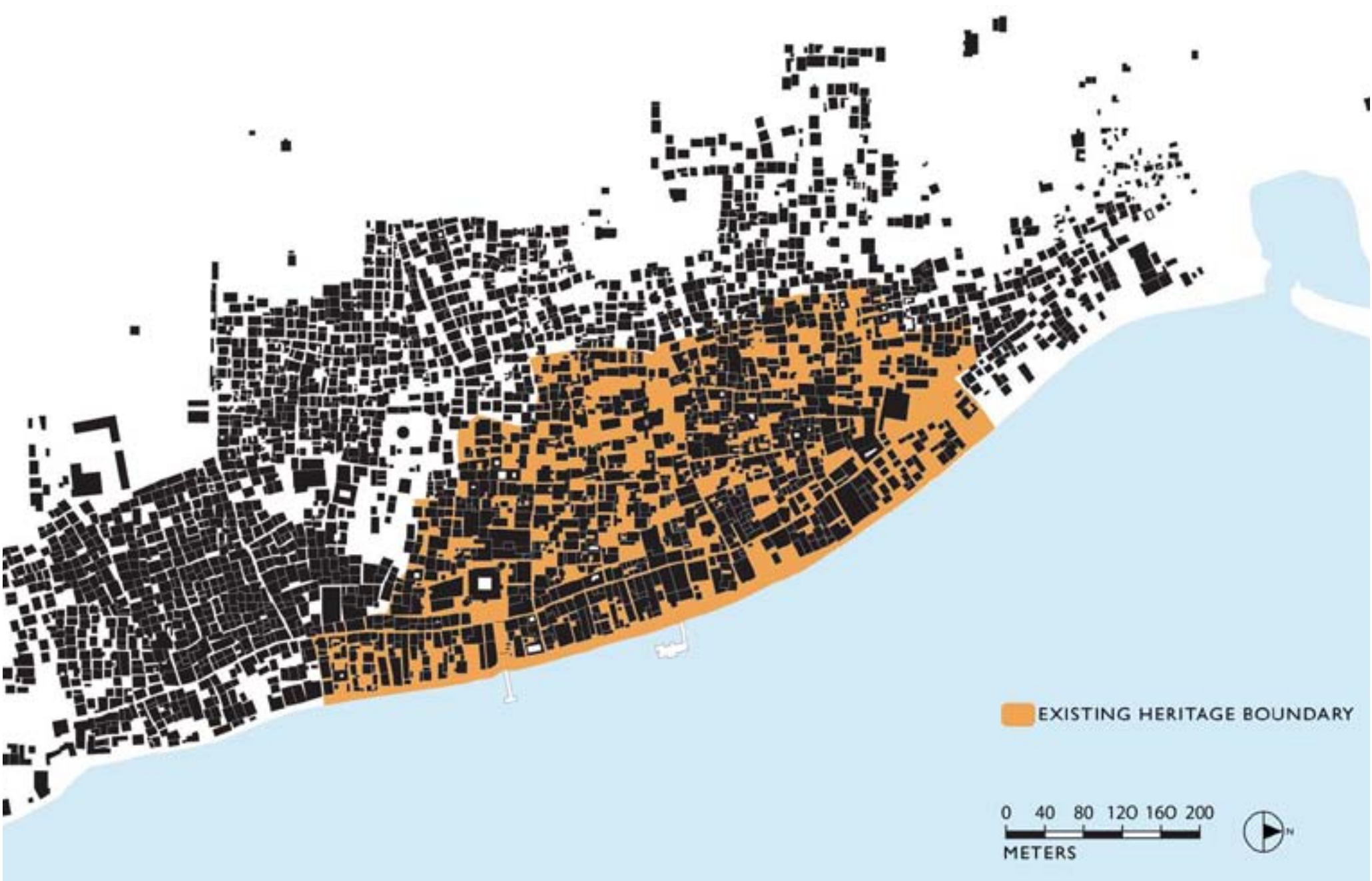




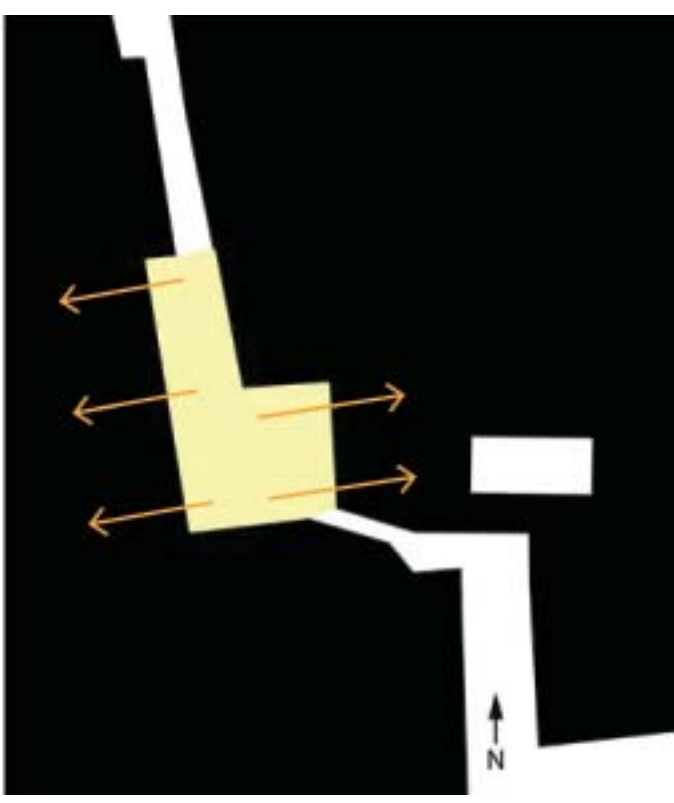
TYPOLOGICAL STUDY OF SWAHILI URBAN SQUARES IN LAMU, OLD TOWN



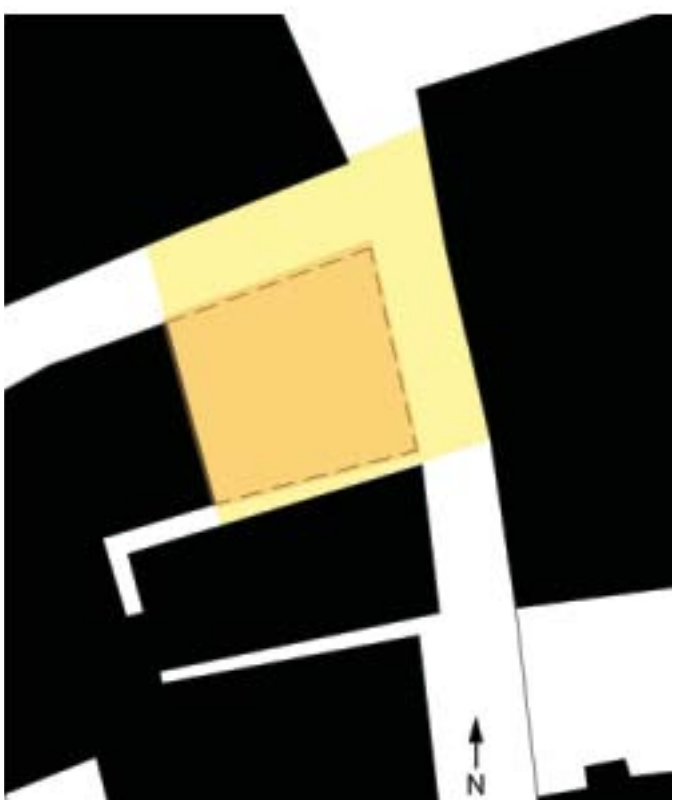
Urban morphology studies urban fabric as a means of discerning the underlying structure of the built landscapes. A morphological study can reveal the genius loci of Swahili squares.



Type 1
Square forms at the intersection of pedestrian pathways



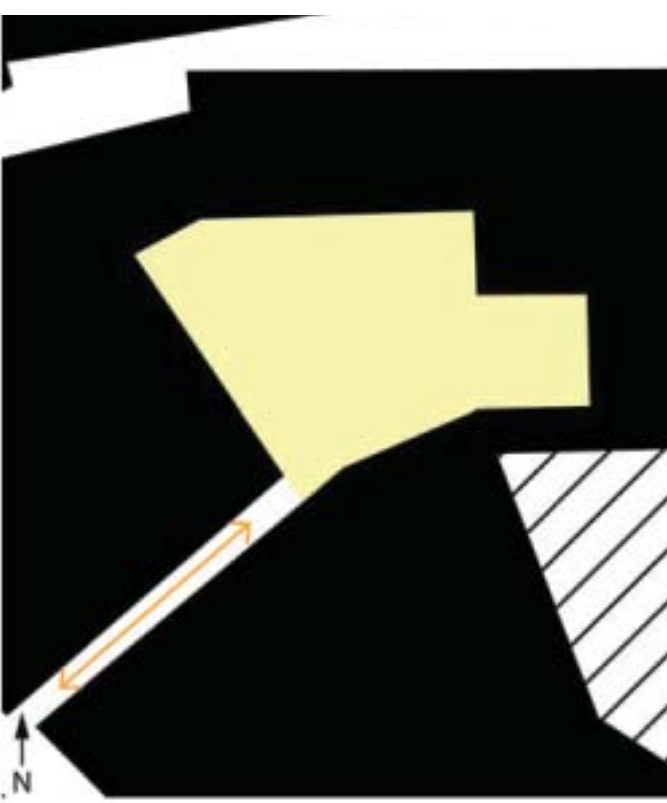
Type 2
Square created as a result of street widening



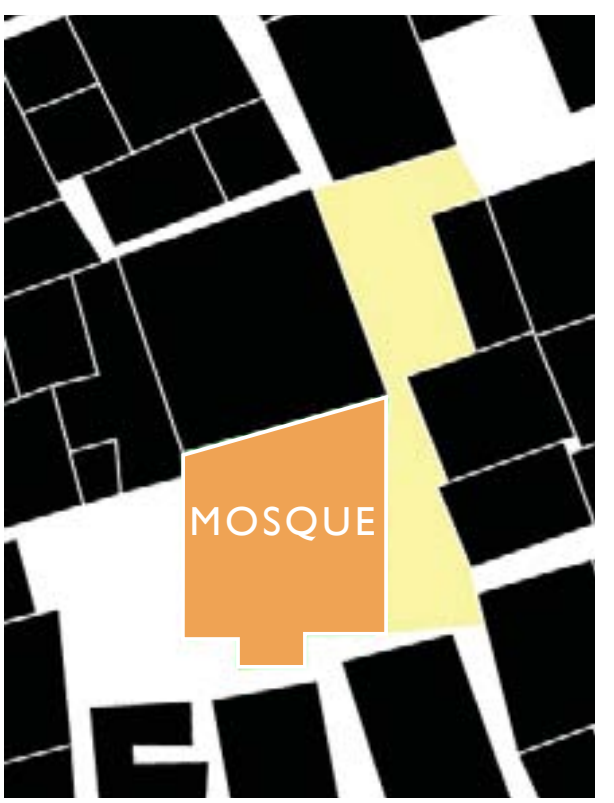
Type 3
Square forms in the remaining footprint of a collapsed building



Type 4
Square created where the urban fabric overlaps with a major road or seafront



Type 5
Square emerges from the space behind surrounding residences to create a courtyard



Type 6
Neighborhood communal and gathering space forms around the presence of an adjacent mosque

Arthur Chen - PhD. Director, Center for World Heritage Studies, University of Minnesota



**Tema 3
Criticism, Conservation and Restoration**

Thais Fátima dos Santos Cruz
Faculdade de Arquitetura e Urbanismo (FAPESP),
Estado de São Paulo, Brasil

(Symposium 3. Criticism, Conservation and Restoration)

The restoration interventions of the “Castelinho” in the Railway Village of Paranapiacaba, state of São Paulo, Brazil.

Paranapiacaba is an antique railway village reminiscent of the nineteenth century that has hierarchically divided housing typologies. Among these types the most prominent is the home of the chief engineer, popularly known as Little Castle, built in 1897. This property passed through a general intervention in 2004 based on exceeded methods and concepts, for example, the way back to the original characteristics. Having as a final result, theory and action didn't come together.



Main Facade. Before, (2002). During, (2004) and after (2012)

Originally the building was in vanished. As time passed by it was the same oil base paint used in painting locomotives and train's wagons. There was no restoration of the wood (European pine), but their replacing. According to document the time the windows were never white.



Ambient: pantry. Before, (2002). During, (2004) and after (2012)

Before with built-in cabinets. Removal and exclusion of built-in cabinets. Changing the wall's color. Without a thorough study of prospecting.



Wrong intervention methods damaged the original timber. The whole building passed through a fire torch treatment to remove the old layers of paint.

All the work that was done in this building has as a final result, the loss of the original features, just what is sought to achieve this intervention. Then, the theory described in the memorial differs much from the work carried out. This is a not a model example that it should be follow it.



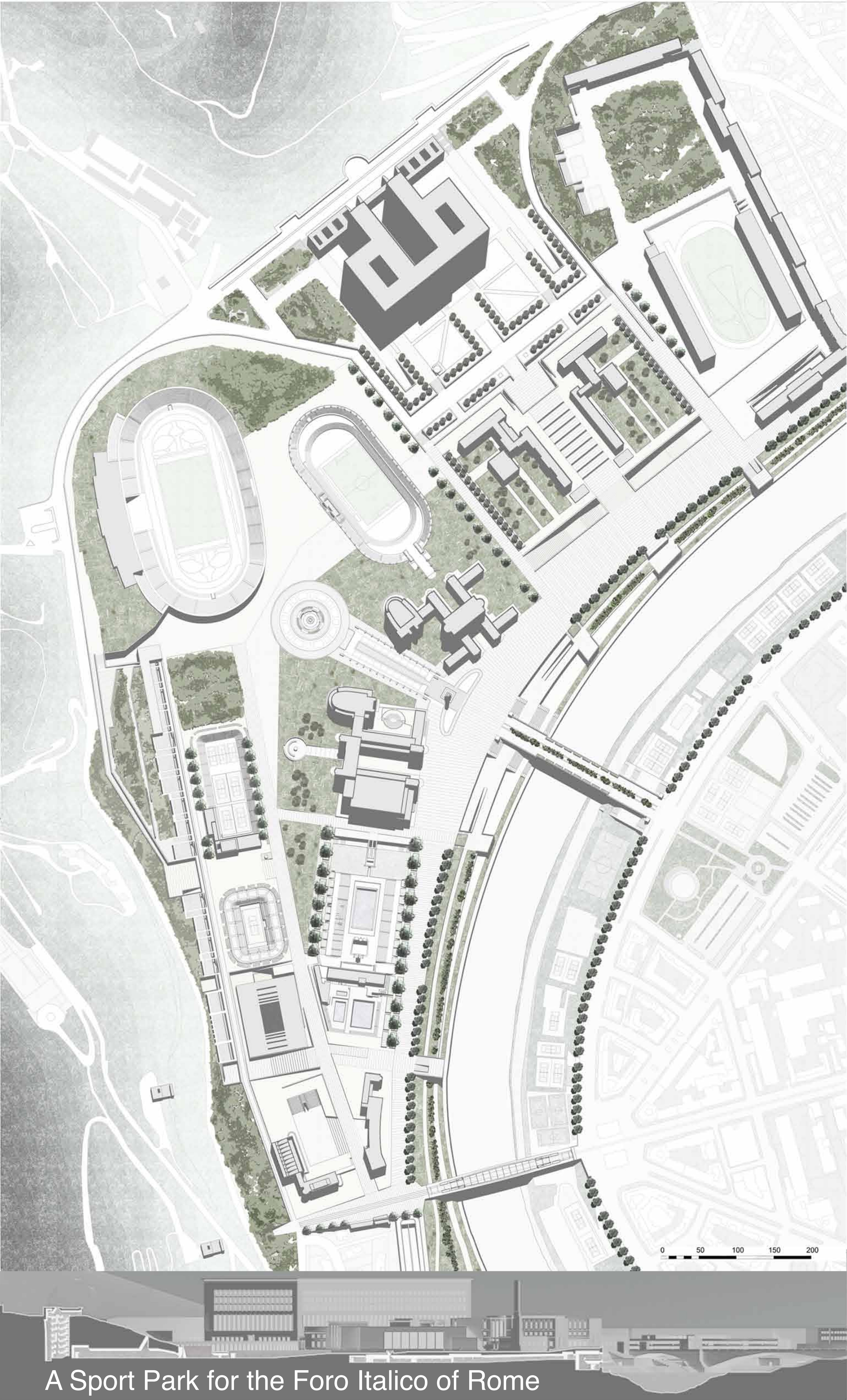
**Arqtª Thais Fátima
dos Santos Cruz**

Universidade de São Paulo - PhD Students of
Faculdade de Arquitetura e Urbanismo.
Apoio: Fundação de Amparo à Pesquisa do
Estado de São Paulo (FAPESP)



Tema 3
Criticism, Conservation and Restoration

Vito De Bellis
Politecnico di Bari, Italy



A Sport Park for the Foro Italico of Rome



Urban Renewal Under Social Sustainability Approach: Mirador de los Nevados Park in Bogota, Colombia

Juliana Forero, *Huazhong University of Science and Technology, Wuhan, China*

PURPOSE OF THE RESEARCH

To describe how through the recognition of the spirit of the place for cultural heritage preservation, within social sustainability context, it is possible to achieve sustainable development processes. The analysis of the creation of the park Mirador de los Nevados helps to understand how the link between social sustainability and cultural heritage preservation, bring up sustainable cultural and urban heritage preservation practices.

THE PARK

Mirador de los Nevados is a metropolitan urban ecological park created in 2002 and belongs to the Muisca Indigenous Reservation Area. The site is one of the cultural and natural heritage places of the city and it has become a platform for environmental conservation and education of the citizens. Its architectural design is based on the Muisca Indigenous cosmology.

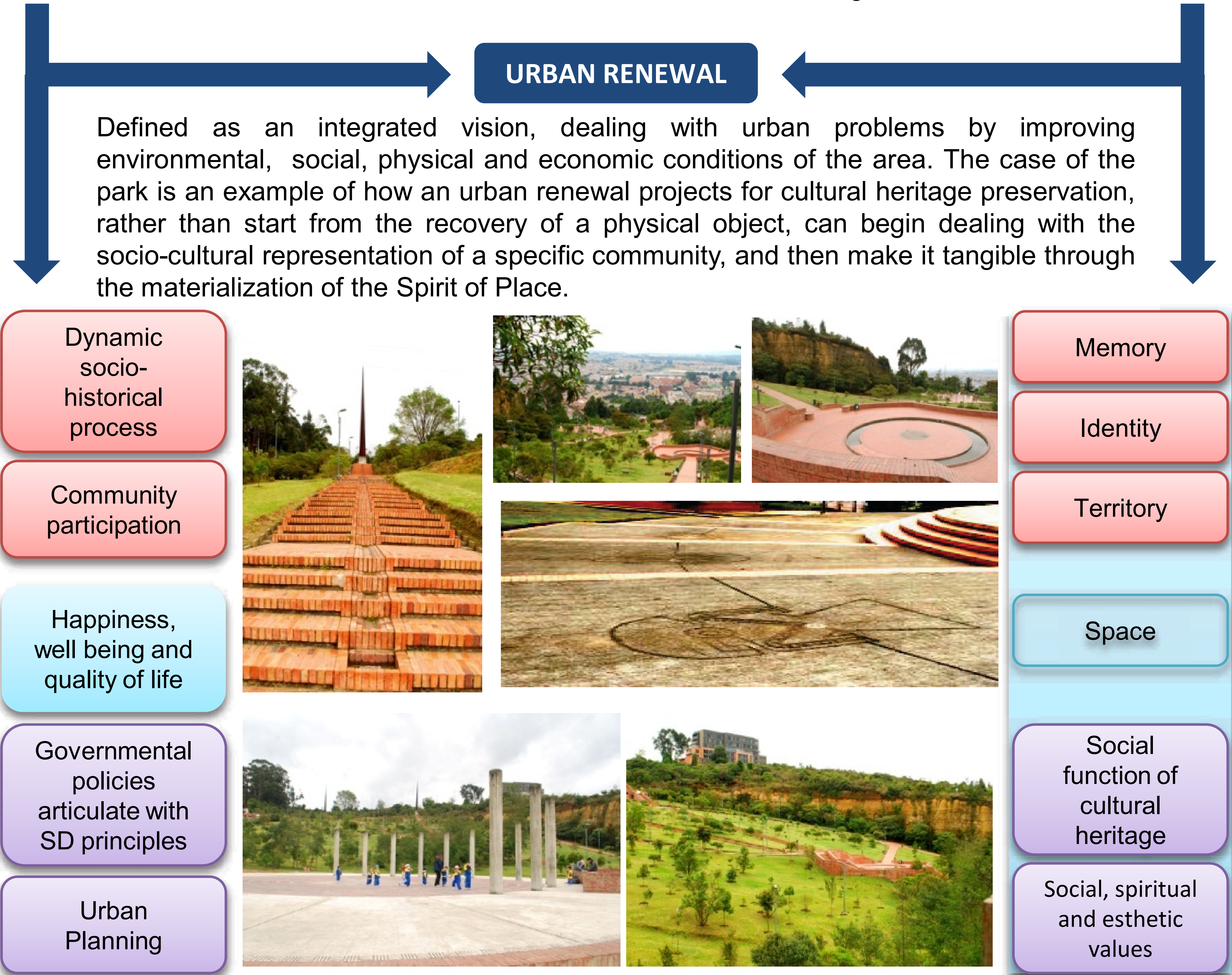
SOCIAL SUSTAINABILITY

Concerns to how the communities coexist, their “chances of life” and the natural and created environments they live in. It involves specific cultural or social relationships, social structures, custom and values, as well as entail the notions of happiness, well-being and quality of life.



SPIRIT OF PLACE FOR CULTURAL HERITAGE PRESERVATION

The Spirit of Place theory embraces the essential categories for heritage -identity, memory and territory-, considering that its material and immaterial components cannot be divided and its relation within the space. Cultural heritage is protected because of its cultural significance and social function.





Tema 3 Criticism, Conservation and Restoration

Pierfranco Galiani
Politecnico di Milano, Italy

Project for the identity of 20th-century architecture: recognition, *reclaiming*, sustainability

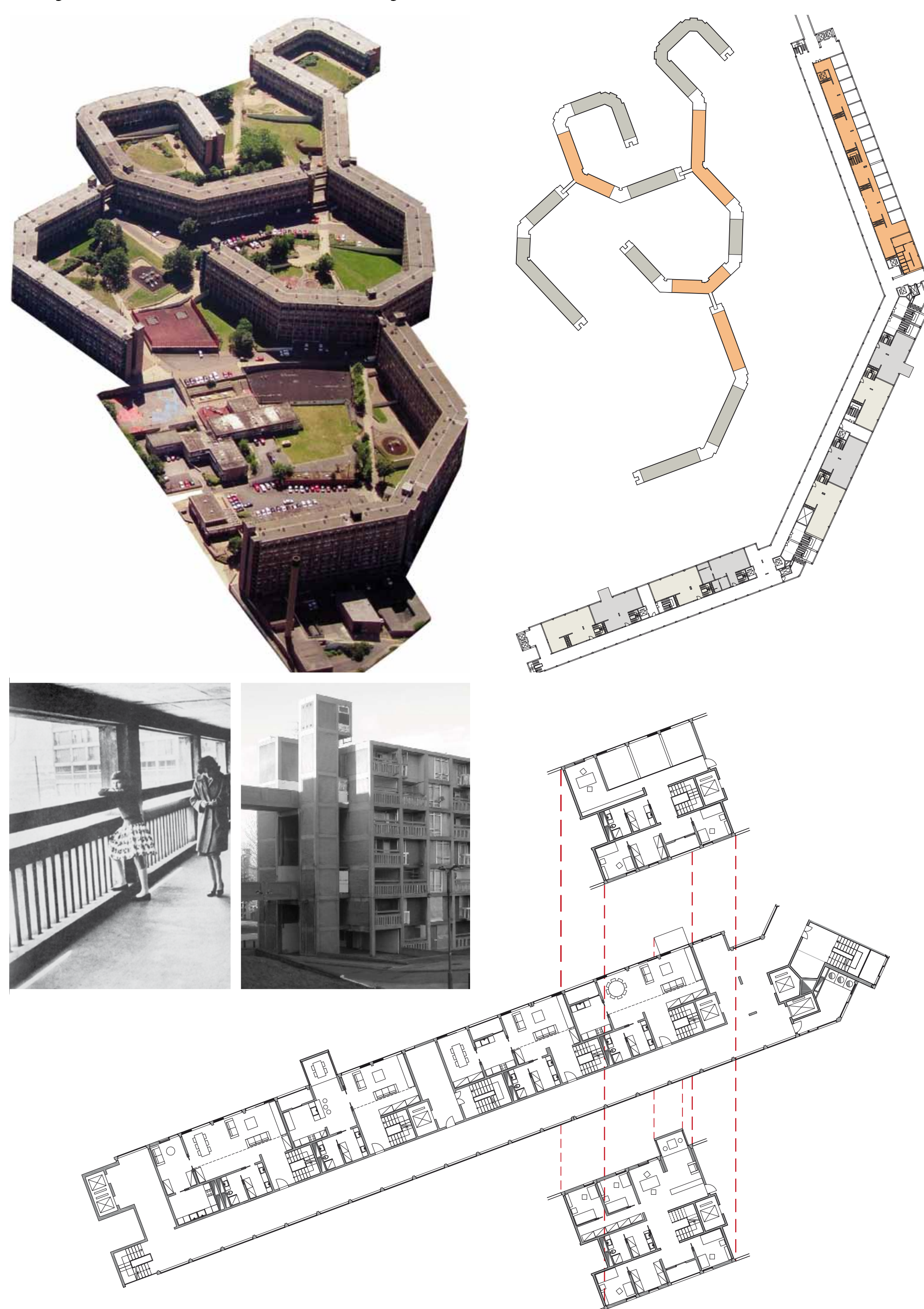
Functional, spatial and expressive *reclaiming* of 20th-century buildings underlines a highly complex and problematic area which has become a key theme in the architectural debate of recent years. Towards the modern architectures, the project implies the assumption of a deep responsibility in the meditated selection of significant built examples to maintain as well as in the designing procedures to be chosen “case by case” with reference to the experimentalism often characterising the 20th century.

Therefore, the architectural works to be *reclaimed* must be subjected to a process of historicization that envisages a realistic chance for their still advantageous use and their consequent placement in an overall urban redevelopment strategy for the future. The method describes the “critical continuity” that the *reclaiming* operation can express about the 20th-century buildings between safeguarding the original identity, renewal of its values and updating to current performance and environmental requirements. Recognition, *reclaiming*, sustainability are the keywords that identify the various interventions.

Recognising means to consider and evaluate the identity of the 20th-century buildings, that represent progress highlights in the culture of the project, stating the chance of their confirmation in the contemporary.

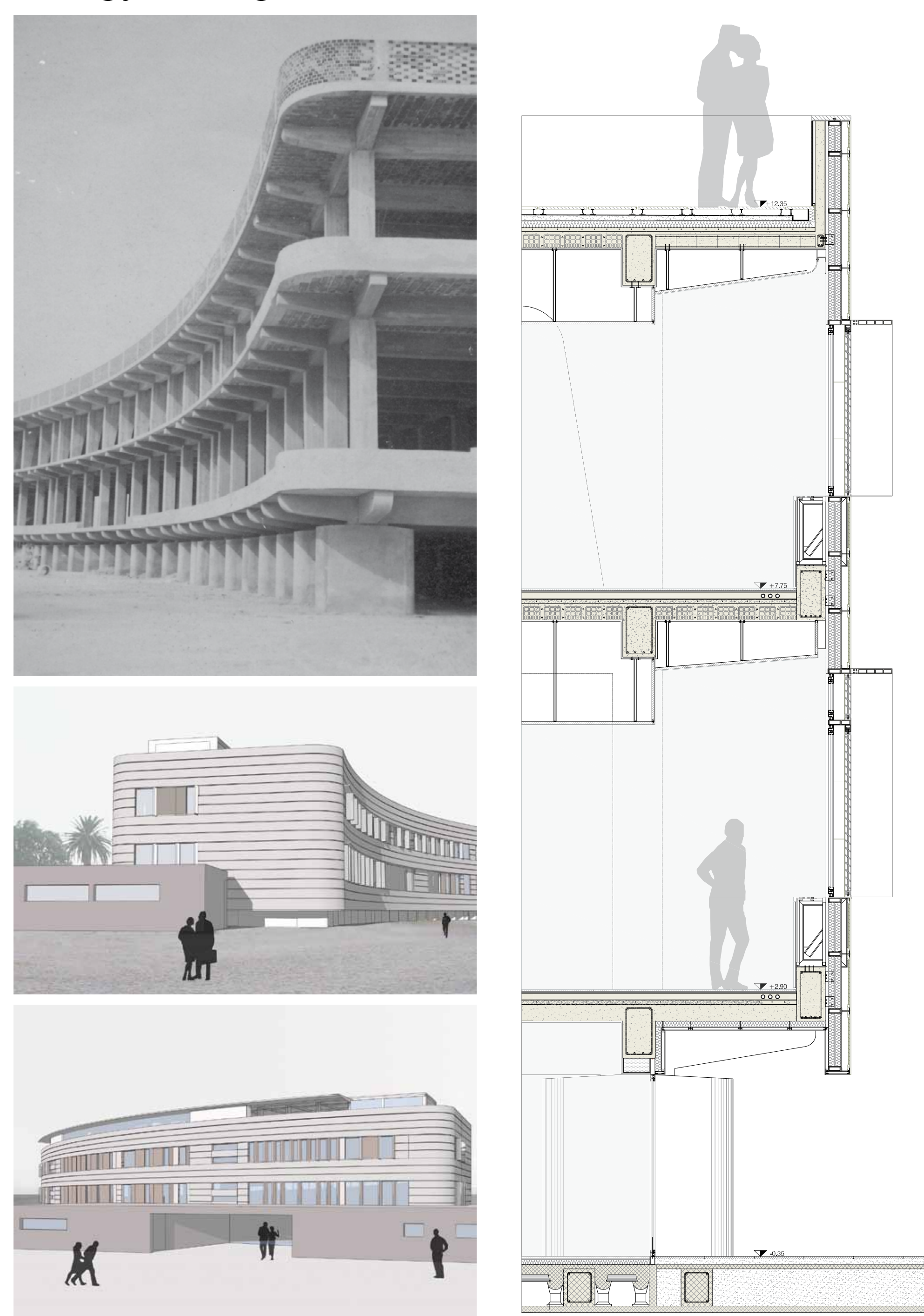
Reclaiming means to operate through the project looking for the balance between conservation and modification for re-use, for functional and technological improvement, for valorisation of material and figurative characteristics of the existing architectural space.

Finally, sustainability means restoring a new environmental quality in obsolete buildings or architectural complexes limiting the urban sprawl and contrasting the common practices of demolition and consumption of new areas. The project researches about the case studies of Park Hill in Sheffield, and ex-Ospedale Marino in Cagliari, demonstrate the joint goal of functional and structural-material *reclaiming* that acts on the reorganization of interior spaces and the critical renewal of the facades, facing the problems of modern constructive experimentalism as well as energy saving issues.



Park Hill Housing, Sheffield (United Kingdom)

This case verifies the inclusion of innovative activities for the culture (library, exhibition spaces, etc.) and residential functions (housing for students, home-studios for artists, etc.) in the buildings of Park Hill, which were designed by Ivor Smith and Jack Lynn (Smithson's pupils) between 1955-1961, and which have become a social ghetto with the passing of time (*design research by Priscilla Agliardi*).



Ex-Ospedale Marino, Cagliari (Sardinia, Italy)

This project studies the re-use of an old hospital as hotel in Cagliari; this building was designed by Ubaldo Badas for a seaside holiday camp on the beach in 1938.

It has a very interesting morphological structure and the project faces the challenge of considering the construction of the facade of the original project that was never realised (*design research by Federica Pala*).



INDUSTRIAL ARCHAEOLOGY —COLLECTIVE IDENTITY AND ECO-MUSEUMS

laser scan 3d

*The Case-study of
Floristella – Grottacalda
Mining Site*

Globalization, economic crisis and loss of values characterize our territories, even if they are full of history, civilization and culture, such as in the Enna's case. A spread heritage often left to itself, not well known, protected and/or promoted; in the popular imagination usually restricted to a series, even numerically large, of churches and palaces standing as vestiges of a more glorious past. Considered as a silent presence, difficult to reach these undisclosed monuments are almost disconnected from social and cultural context in which they lie. Even if they are "familiar" images, they are experienced and primly perceived, because not understood and/or considered no longer adequate to the contemporary exigencies and needs. Significant examples of an important chapter in the history of Sicily, connected to the historical exploitation of its large sulphureous deposits that are today just "echoes": quite evanescent signals on abandoned tracks.

Among these, the complex composed by Floristella and Grottacalda mines, located not far from the UNESCO World Heritage site of the Villa Romana del Casale (Piazza Armerina) and the archaeological excavations of Morgantina (Aidone), is one of the most expressive examples of industrial archeology in Southern Italy. In this area, still visible and dramatically evocative are the signs of several ages (from the end of 18th century to 1986 when activities where stopped), as well as the related systems and methods of mining and sulphur melting.

Only partially located within "protected enclosures" and managed by a park governing body that should take care of its safeguarding and development, this place appears quite "distant" from people that do not "recognize themselves", therefore not visit it. Especially, the mining village of Grottacalda, whose activities started in 1815, remains abandoned, almost inaccessible and it run down, although characterized by a various and extremely interesting architectural heritage: industrial systems and buildings, among which is situated Pozzo Mezzena: an impressive and fascinating architecture with concrete members.

Nevertheless, if properly protected and promoted, for example, in the framework of an Eco-museum structure, strictly connected to the territory; when studied explored and managed for scientific, educational and cultural reasons, in close collaboration with the community and in synergy with the Institutions, such heritage would be a very useful tool for the reinforcement of identities among the population. It will also help in increasing the awareness of the value of cultural and environmental heritage, collaborating for its safeguarding.

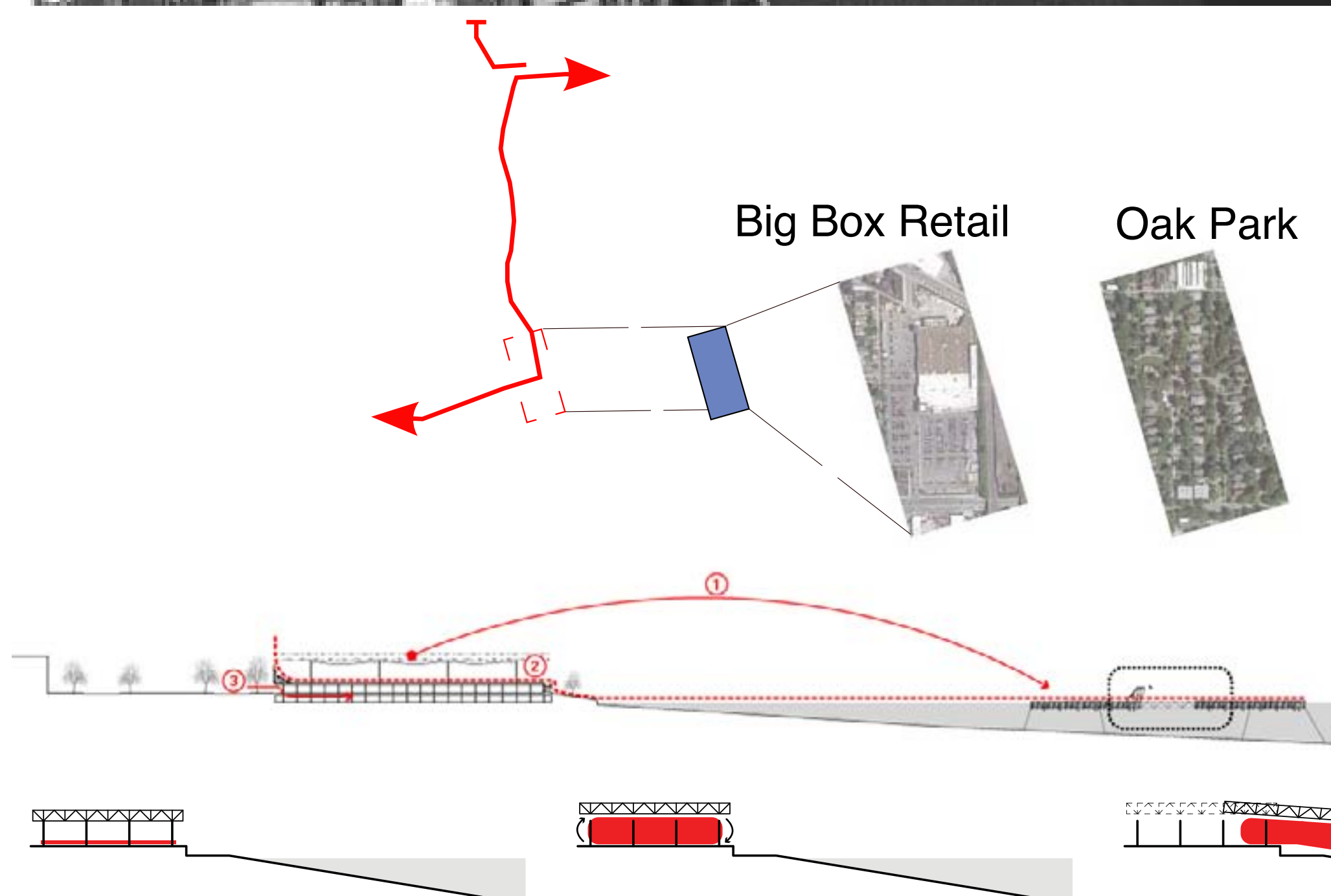
In this light, the objective of the research summarized here, is to establish criteria for transforming this heritage - not only structures, but also people, ways of life, traditions and soul of place - into a powerful catalyst for cultural, social and economic development, through the implementation of activities and behaviors that, starting from the past (its knowledge and conservation) would be finalized to build the future.



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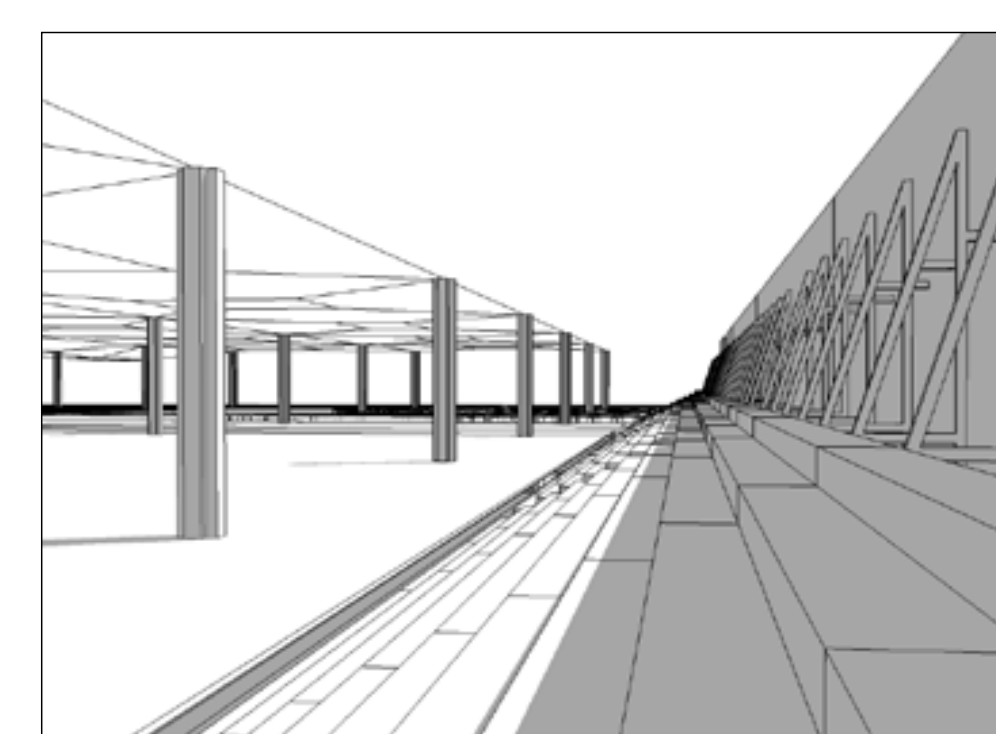
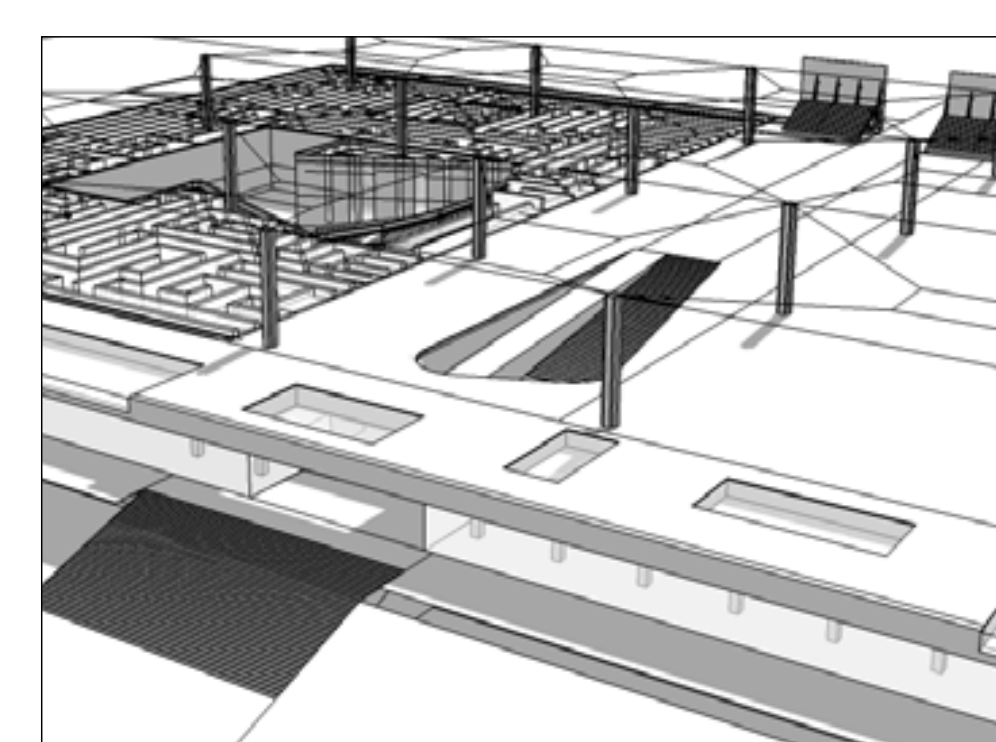
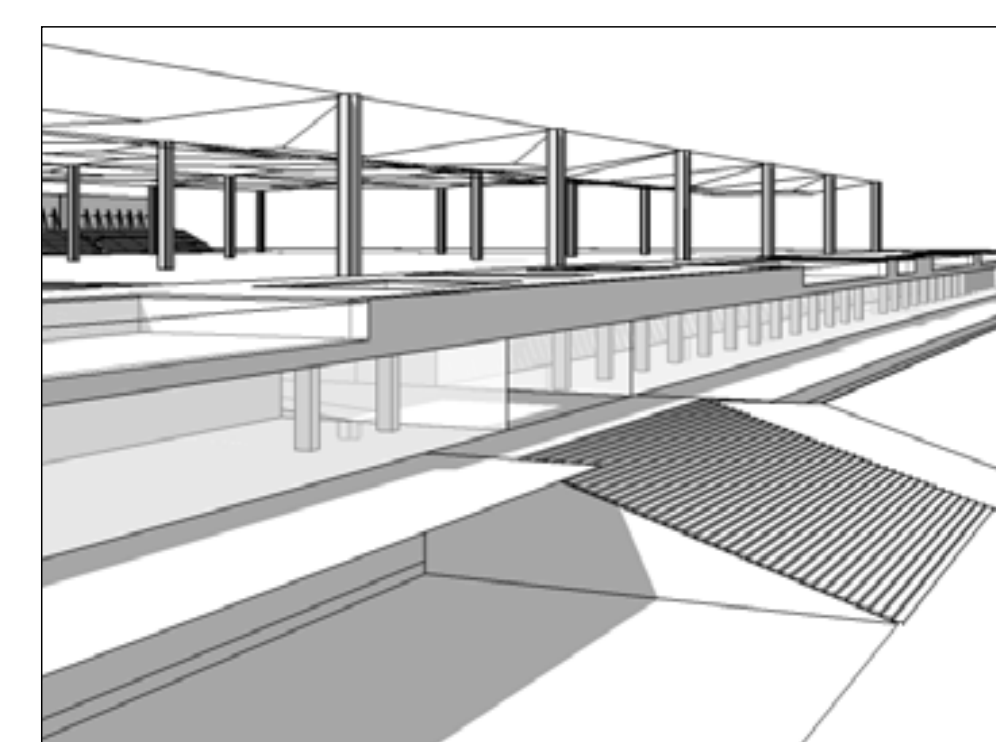
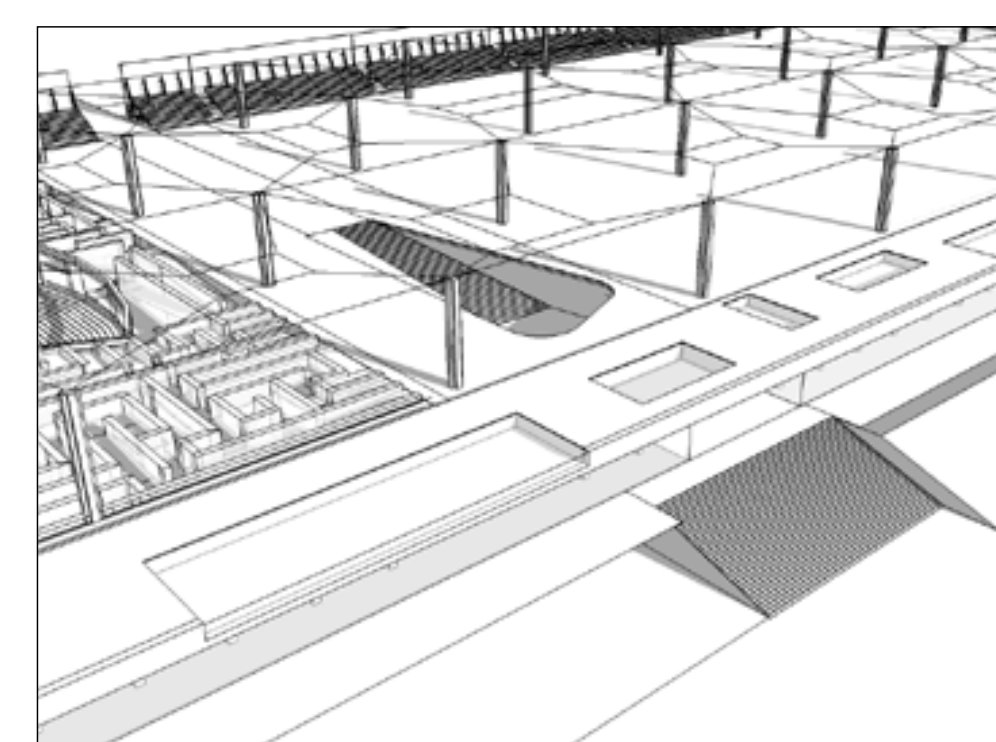
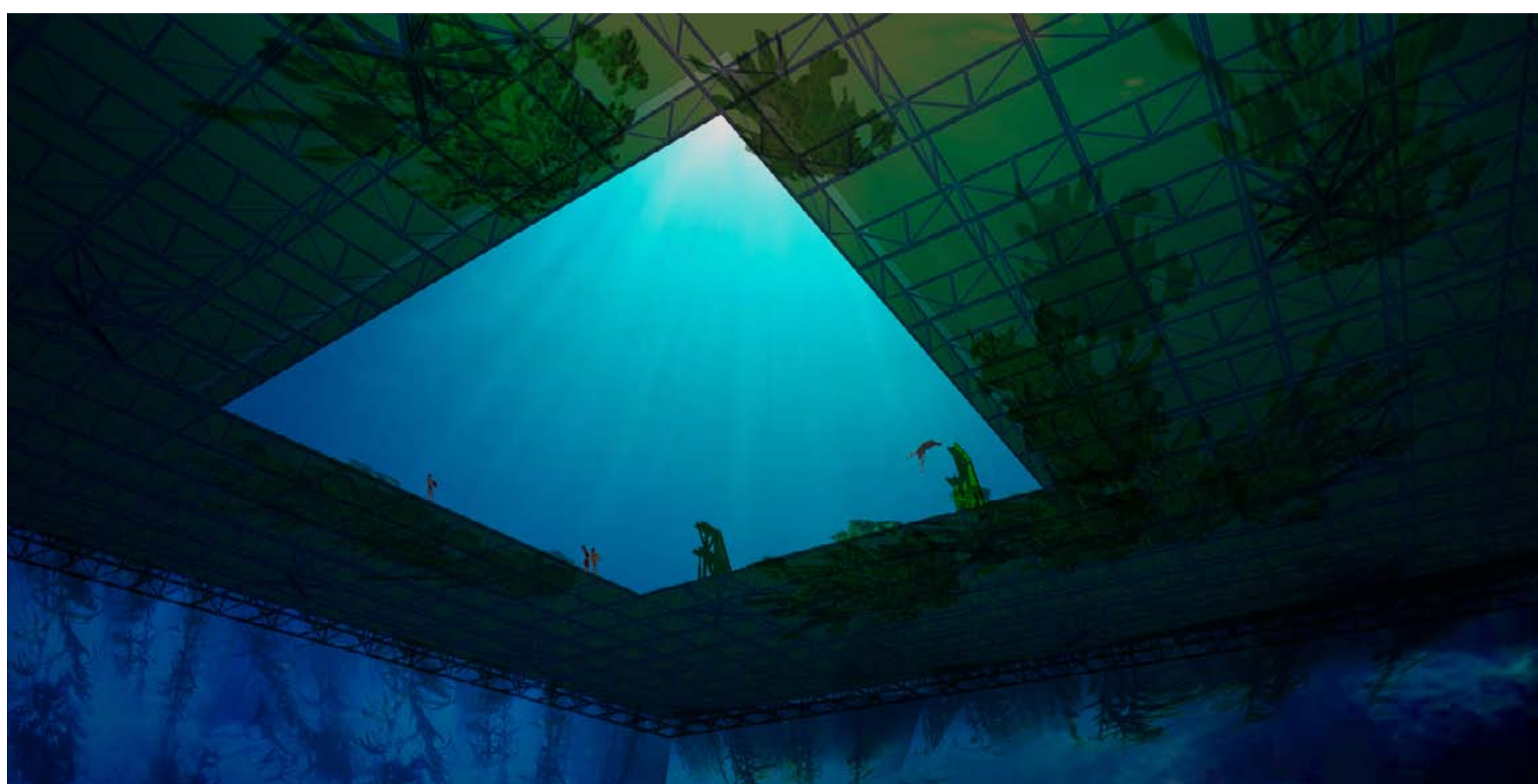


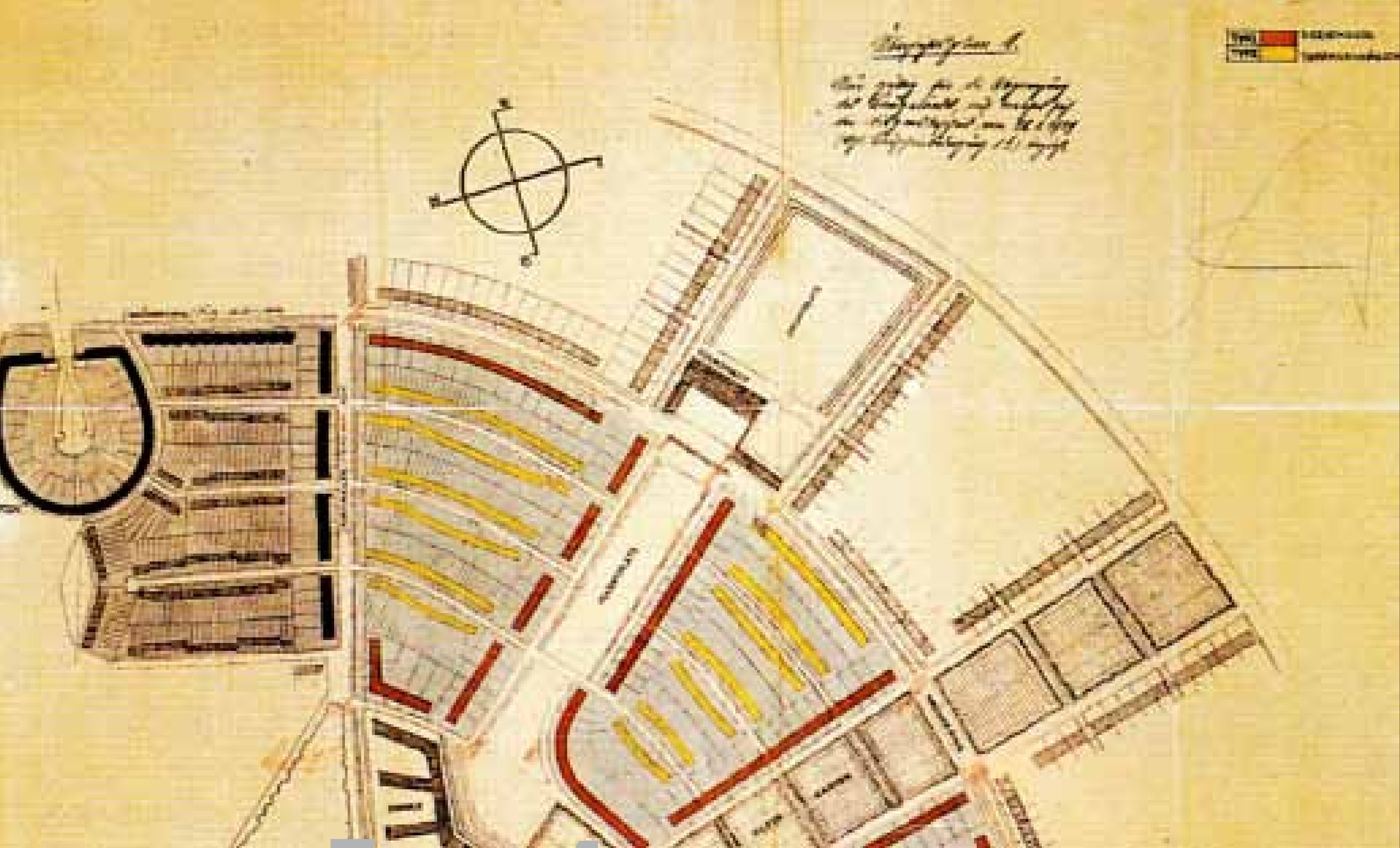
CHICAGO REDOX: BUILDING INTO INFRASTRUCTURE



The consequence of positioning single program mega-structures into urban centers in the 1970's resulted in a glut of large-scale underutilized buildings, many retaining vast parking lots. Prior responses to these mega-structures included demolition, inserting new program or adaptive reuse.

Our design research transforms these mega structures from building into infrastructure and with it changes single, static program to flexible public amenities. Our proposal reconsiders the embodied energy (intellectual, cultural, material, economic) of Gene Summers' McCormick Place (1971), optimally situated on Chicago's lakefront. Given the public position of McCormick Place (the base situated 40' above Chicago's lakefront), we propose a radical reformation of the existing building components. By subdividing the site laterally, a spatial manifestation of the biological process redox (the portmanteau of reduction-oxidation), two new surfaces for outdoor public space capitalize on the existing building's embodied energy. The research considers removing, launching, and floating the roof super-structure into Lake Michigan, creating a new destination for Chicagoans, the ISLAND. What remains becomes the INLAND, a mat-form flexible program below an expansive new surface that hosts seasonal public amenities. This proposal expands 800,000 SF of under-utilized mega-structure into 1.6 million SF of public land.





Tema 4

Housing and the Shape of the City



**POLITECNICO
DI MILANO**



**UNIVERSITÀ DEGLI STUDI
DI GENOVA**

ARCC

**ARCHITECTURAL RESEARCH
CENTERS CONSORTIUM**



**EUROPEAN ASSOCIATION
FOR ARCHITECTURAL EDUCATION**



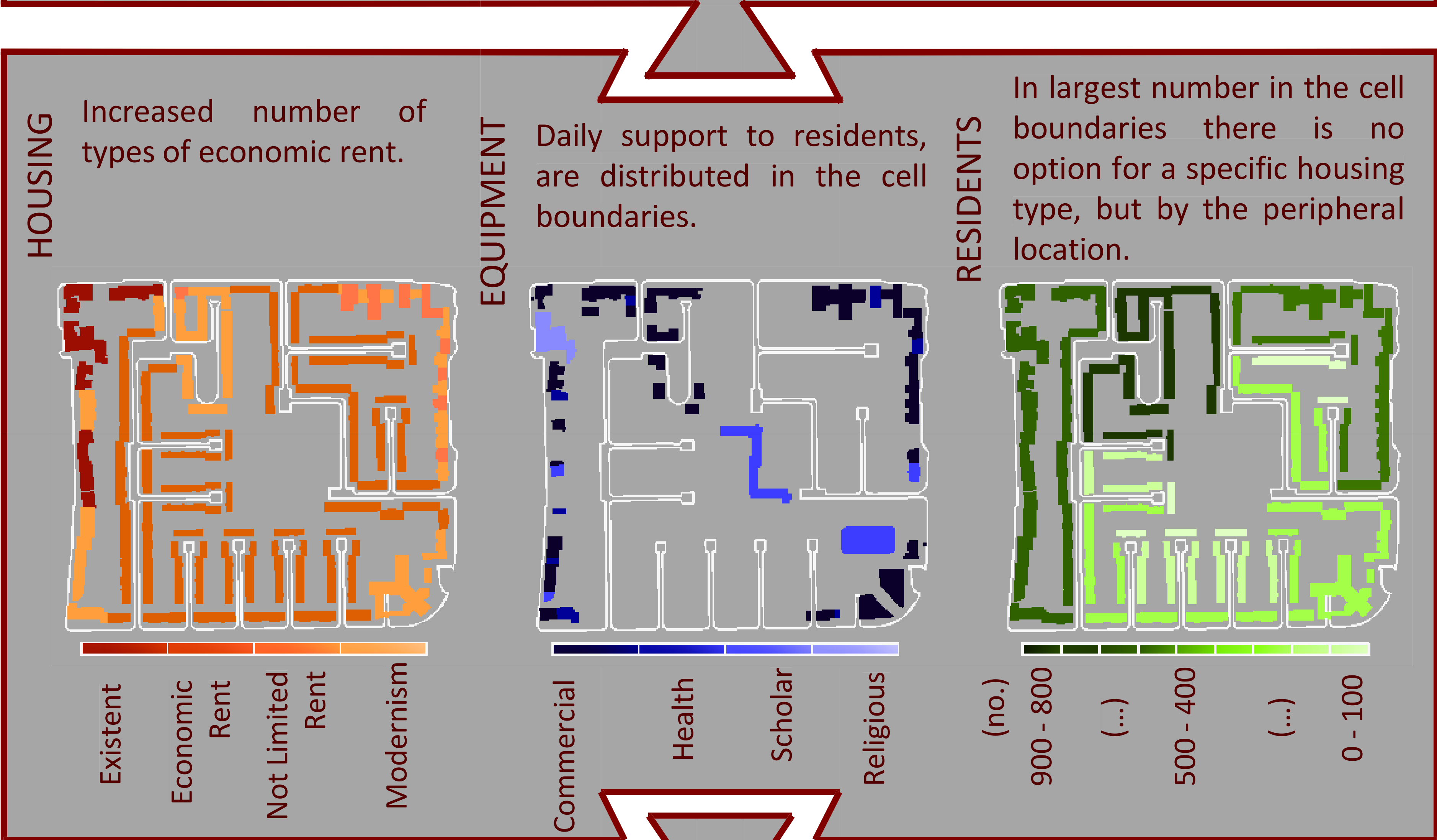
Housing typologies and appropriation of the urban form
The case study of Alvalade's Neighborhood, Lisbon

Sofia Barroco
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Alvalade is a Lisbon neighborhood composed of eight structural cells separated by main roads.



The cell one was the first to be built and where the assumptions were applied to the planned urban neighborhood.



It can be seen that the occupational spots are accentuated on the periphery (north, east and west) of the cell.

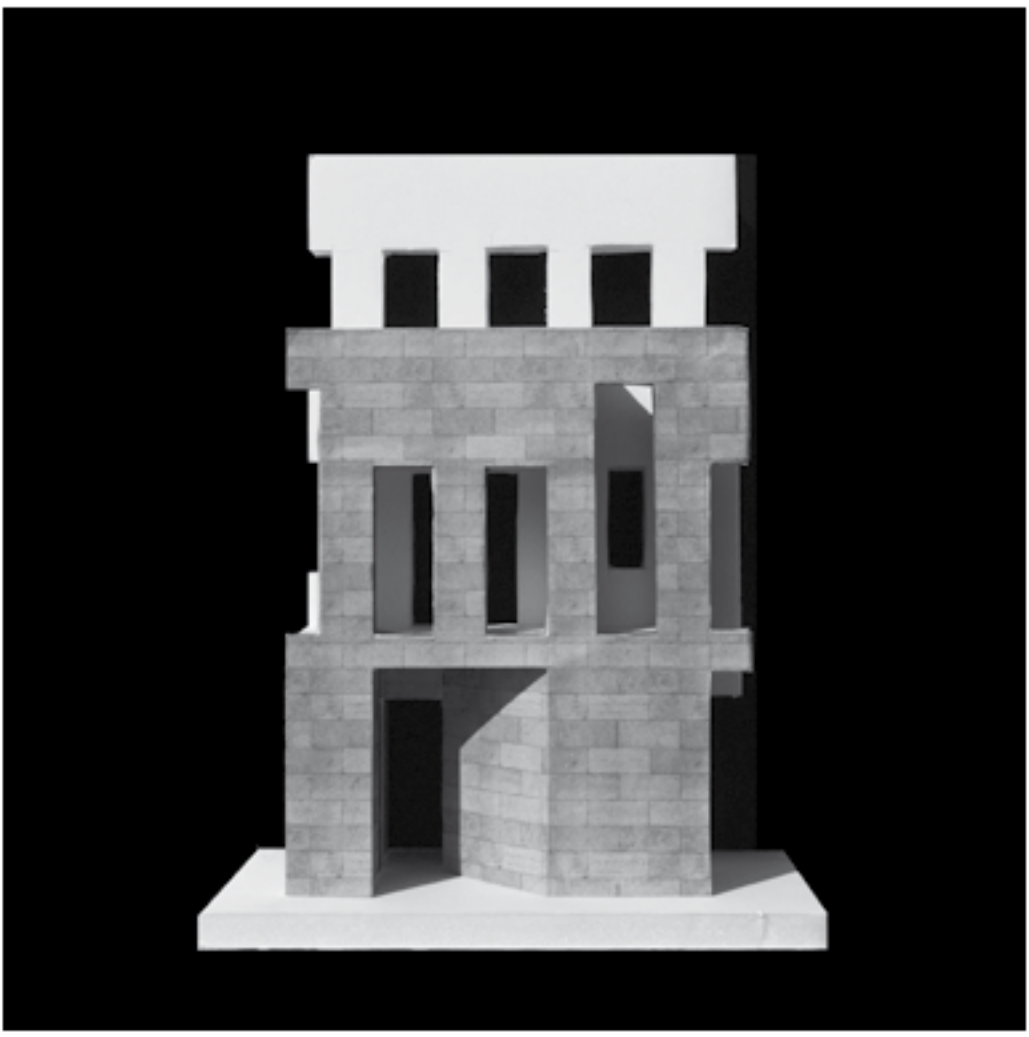
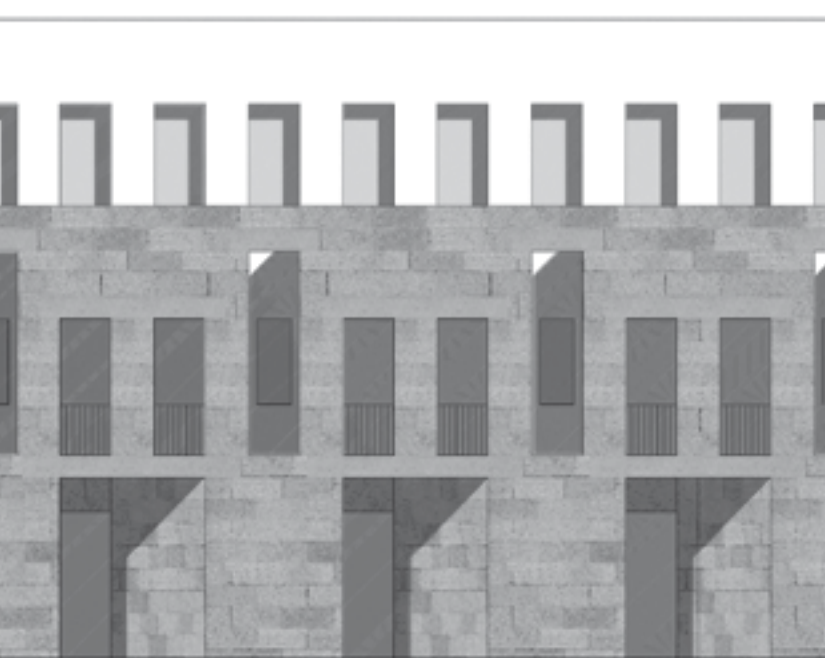
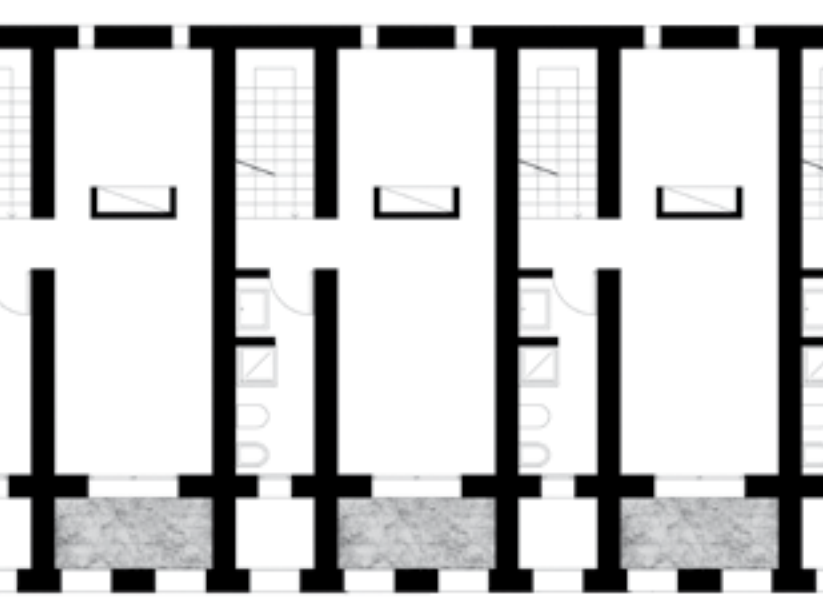
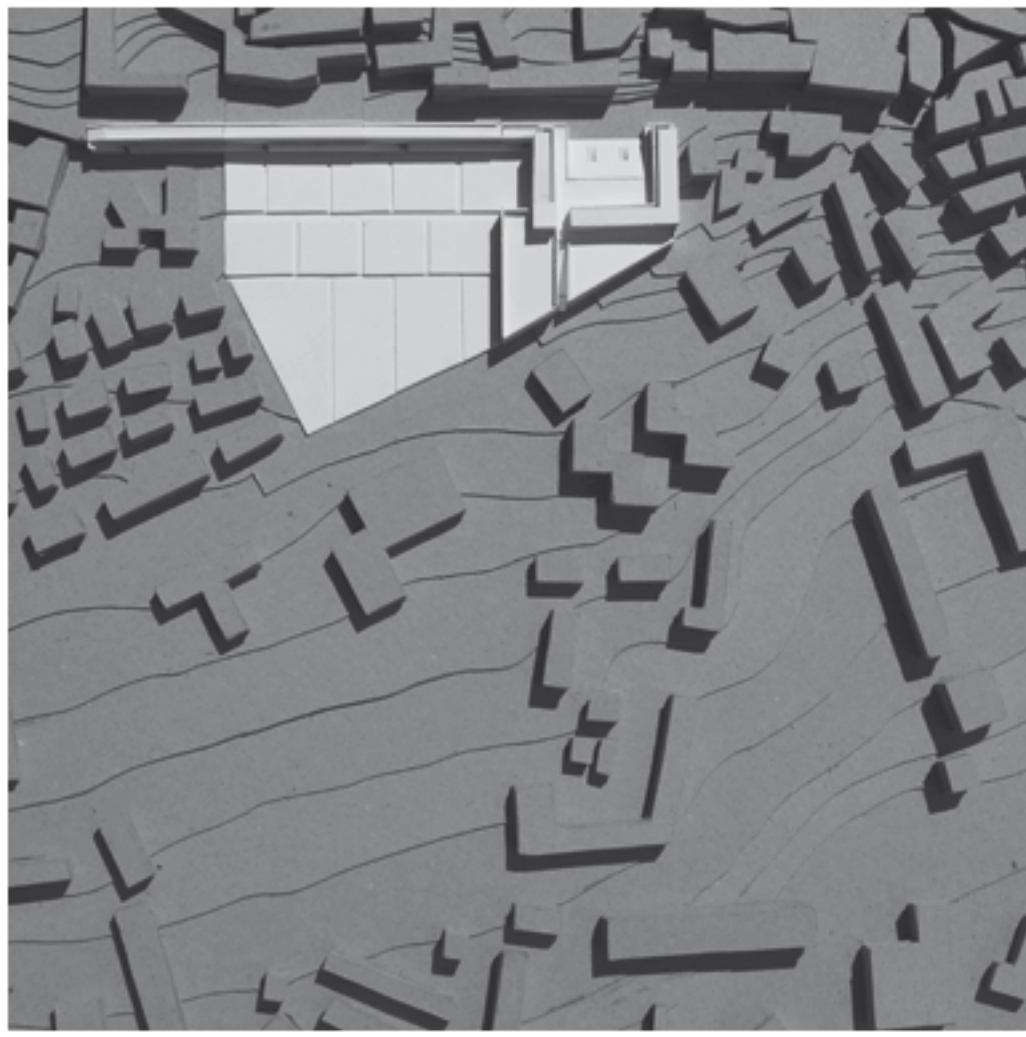
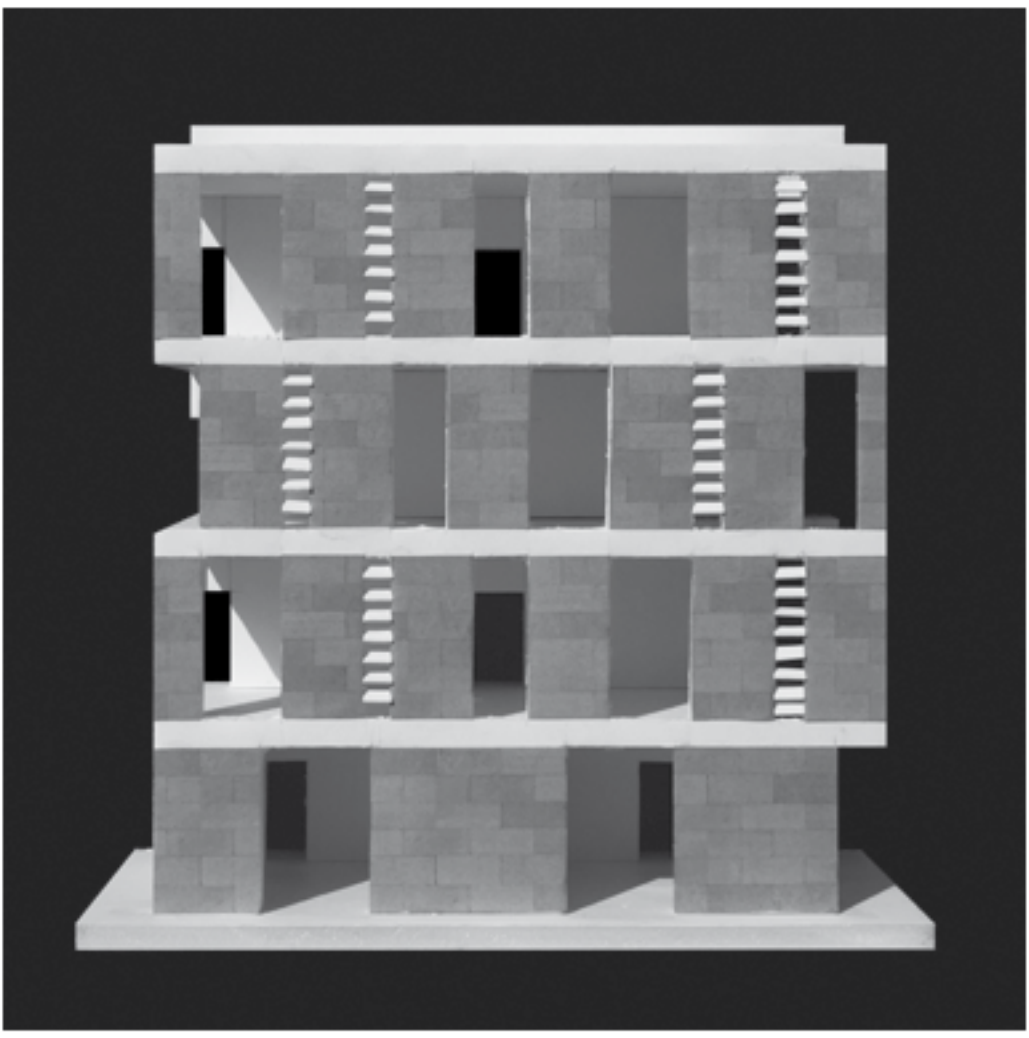
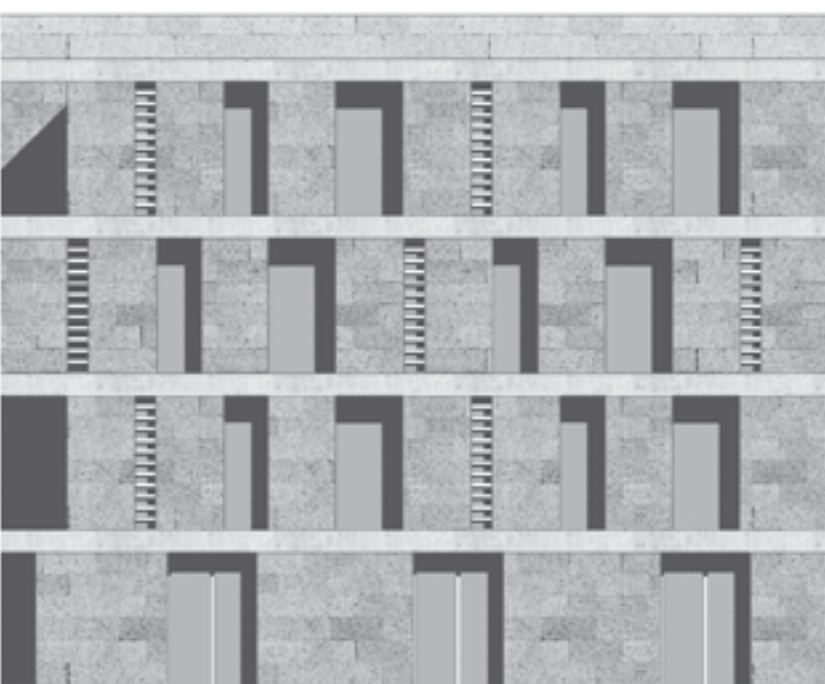
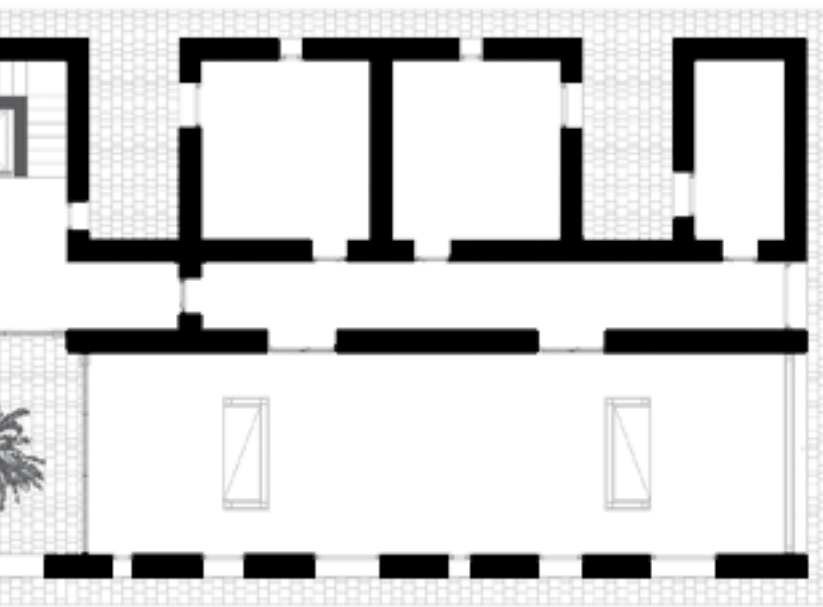
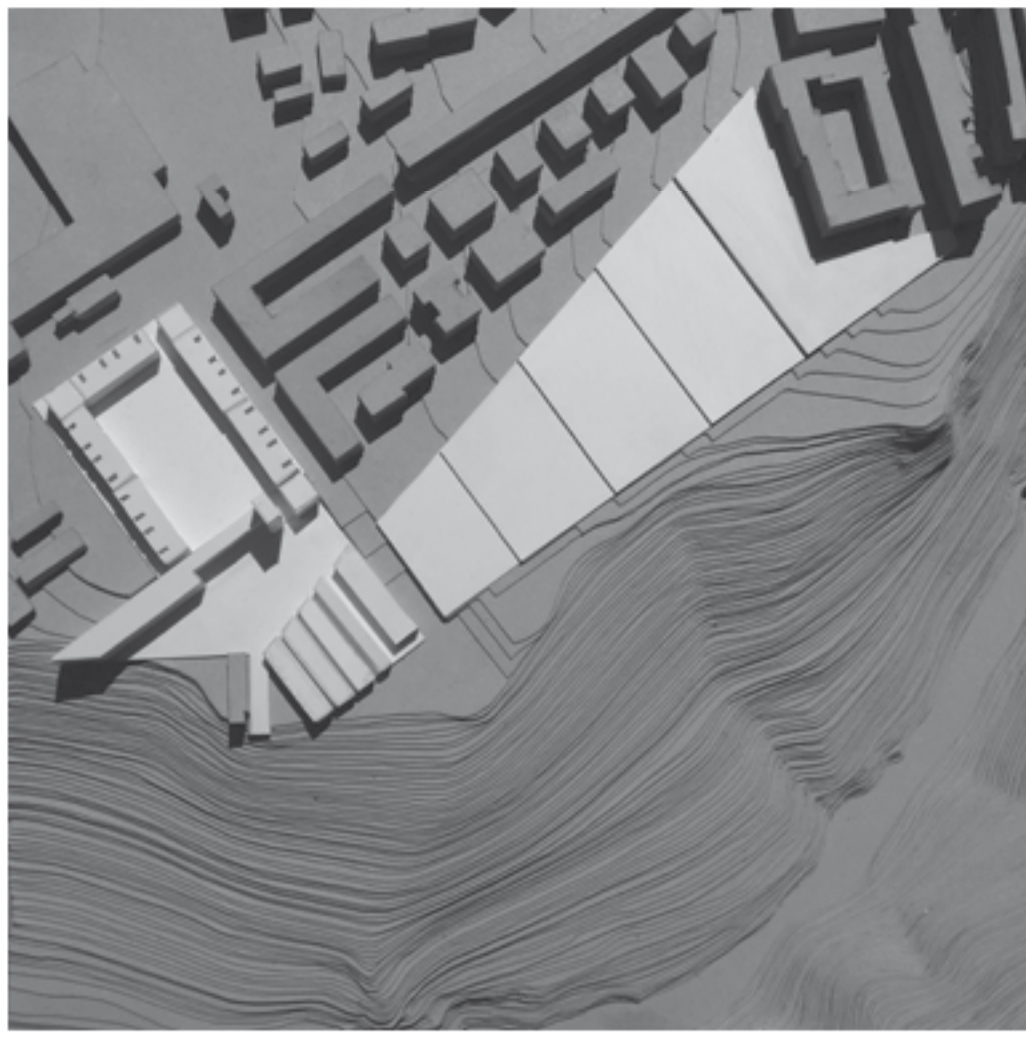
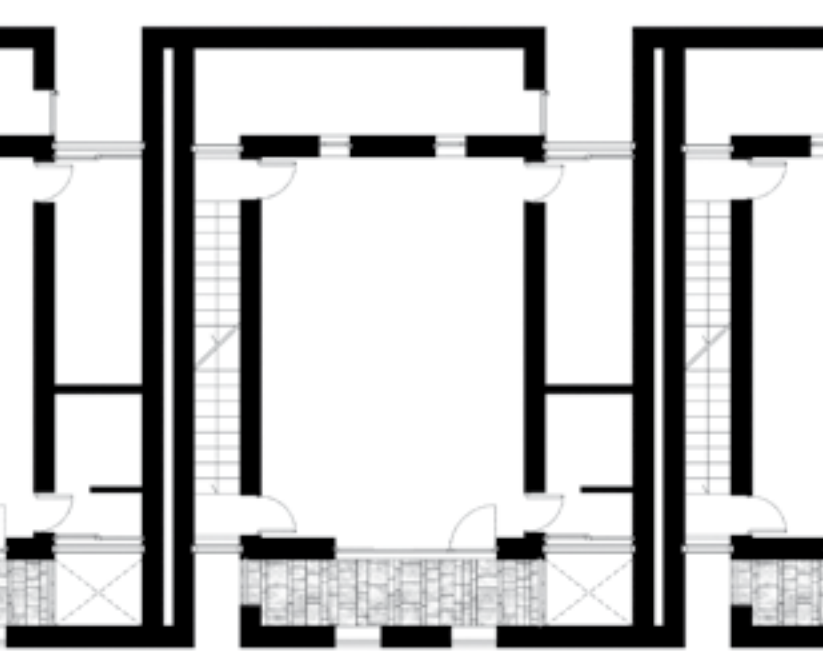
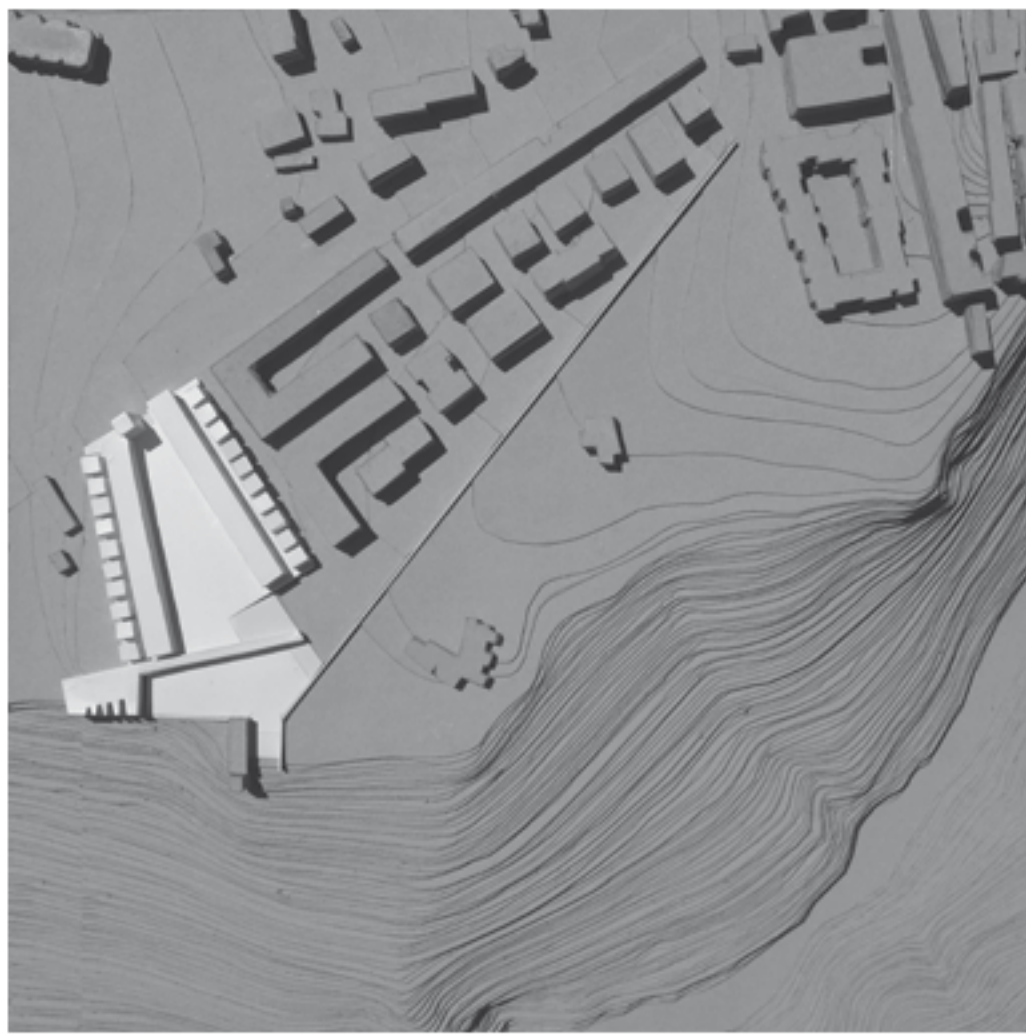
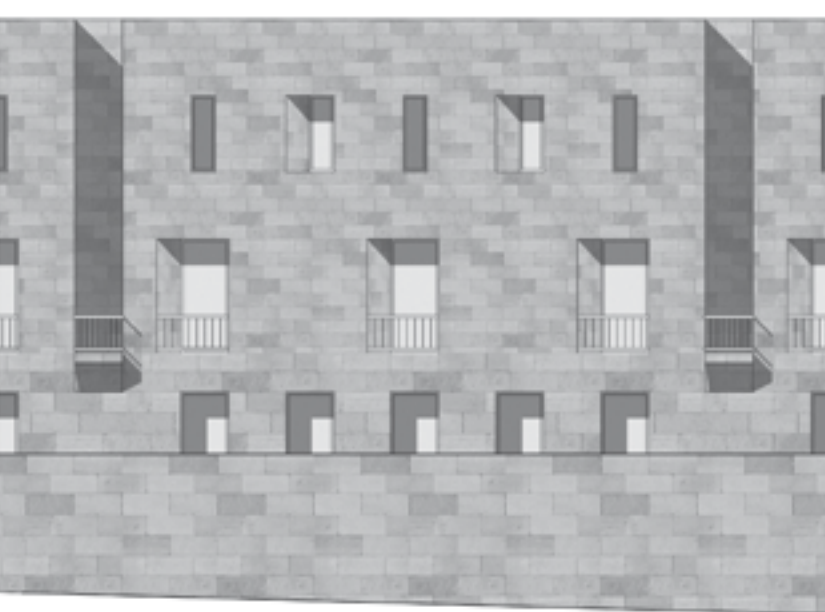
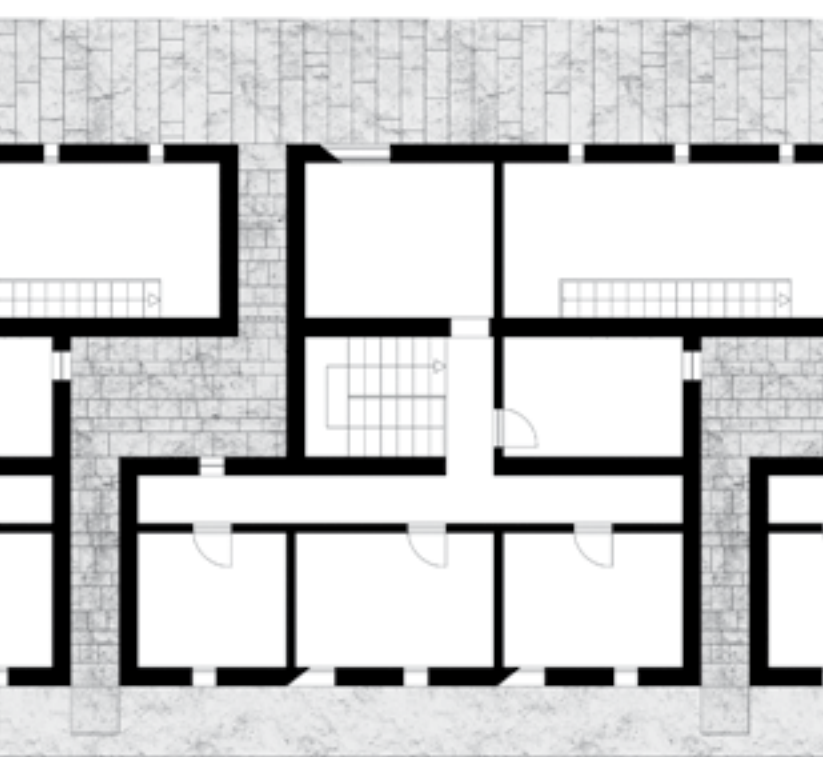
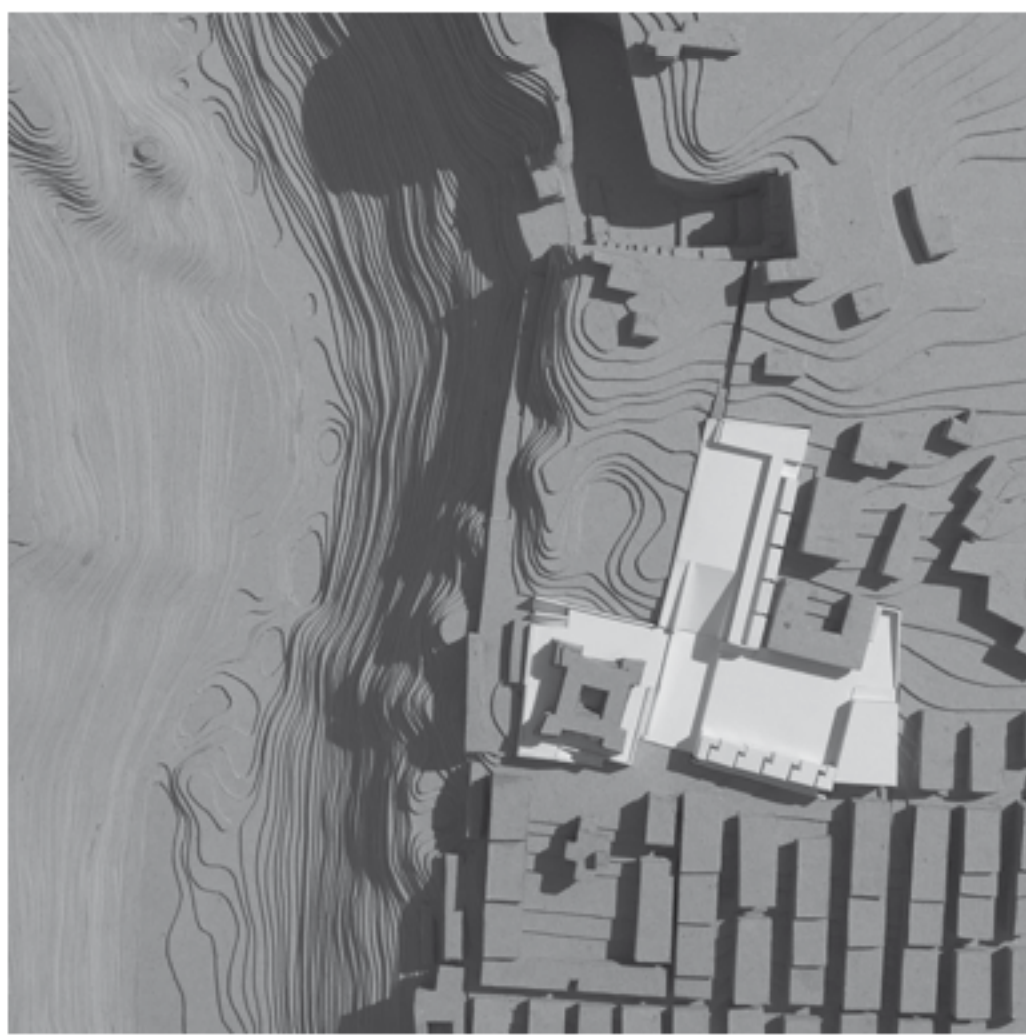
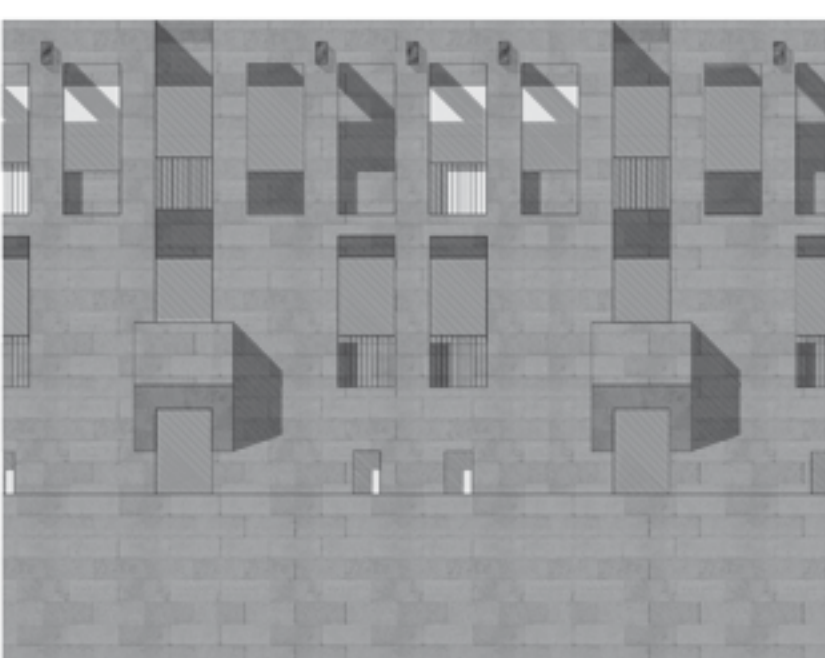
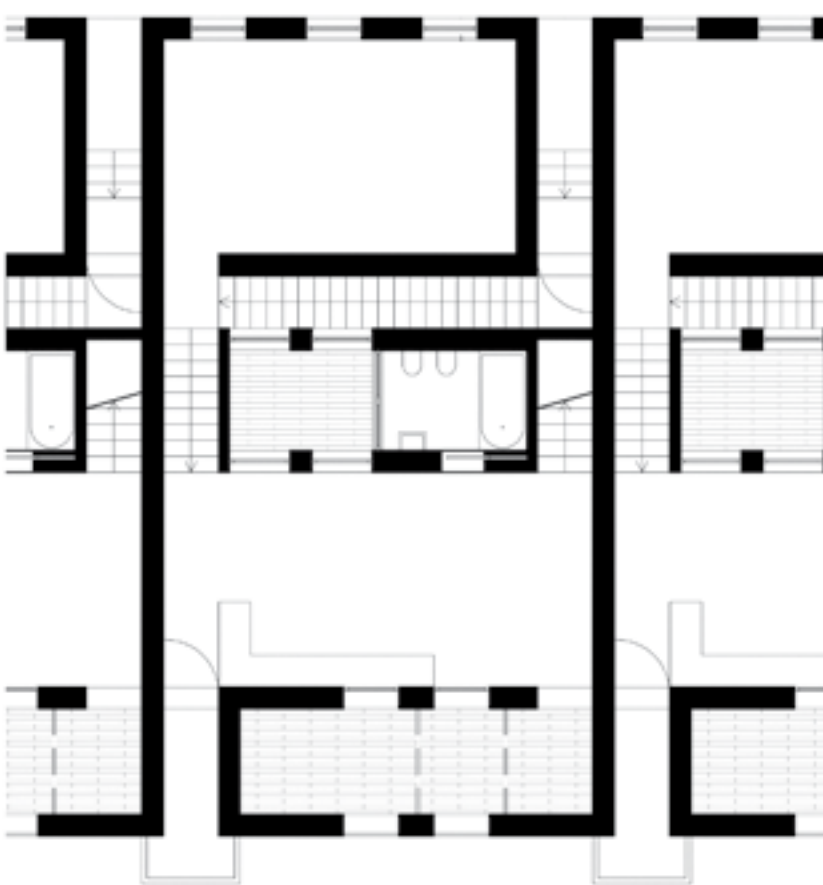
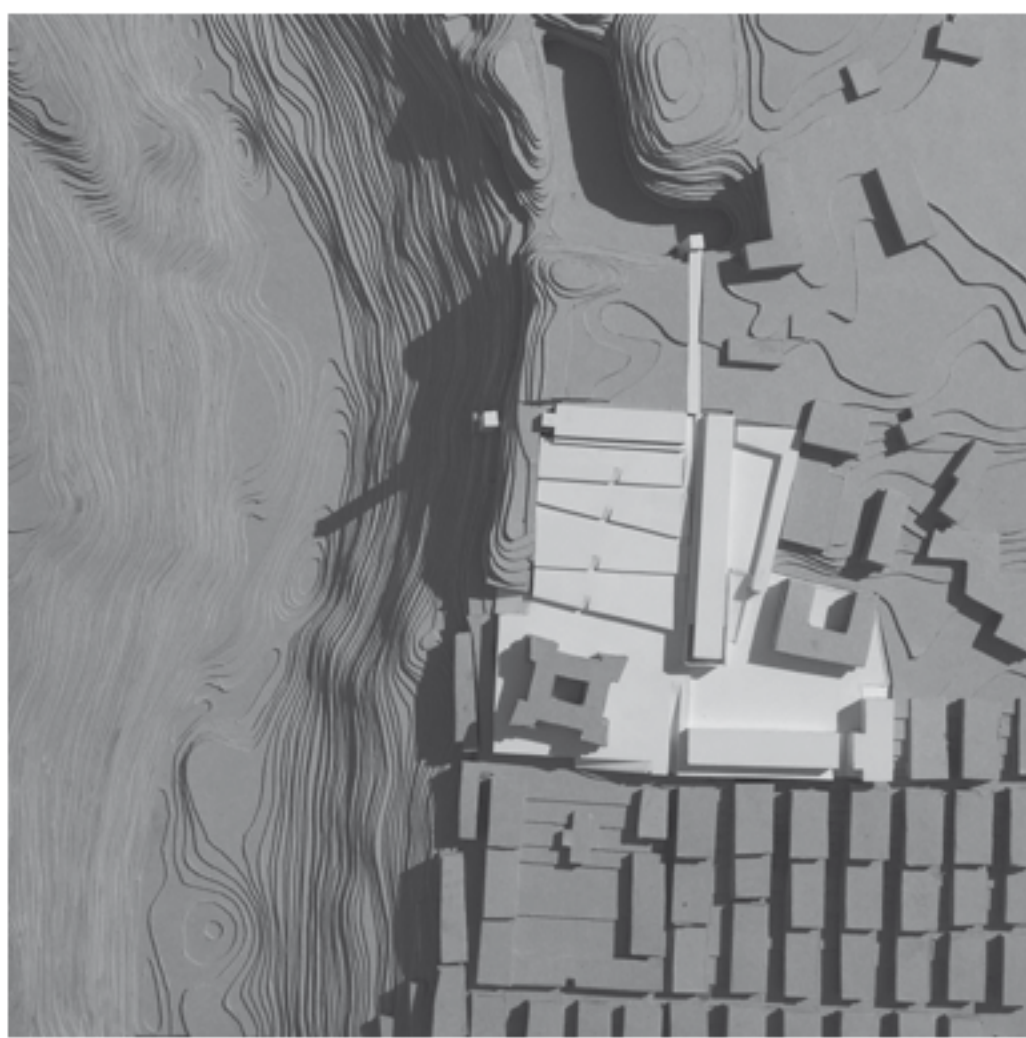
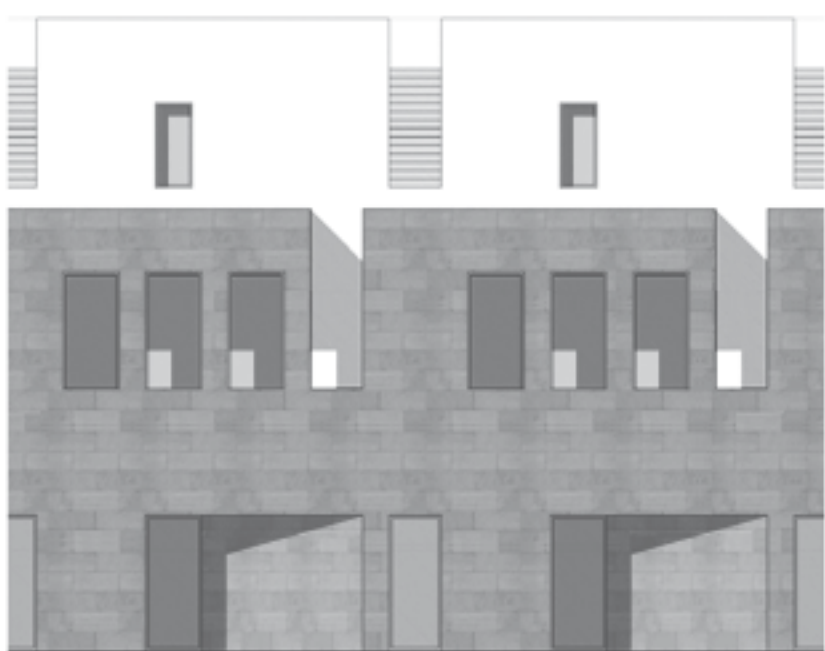
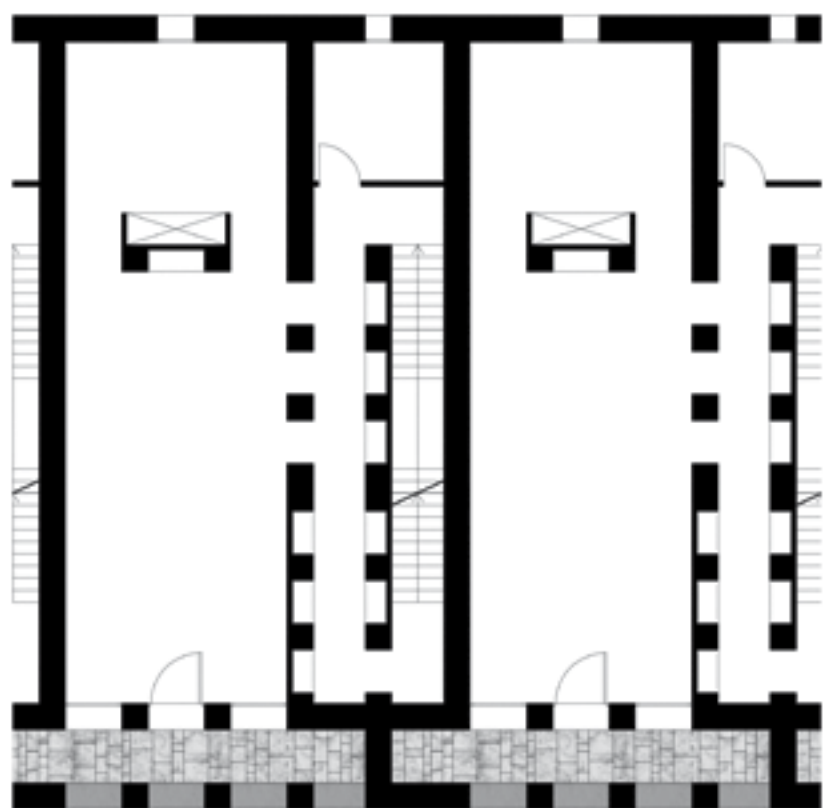
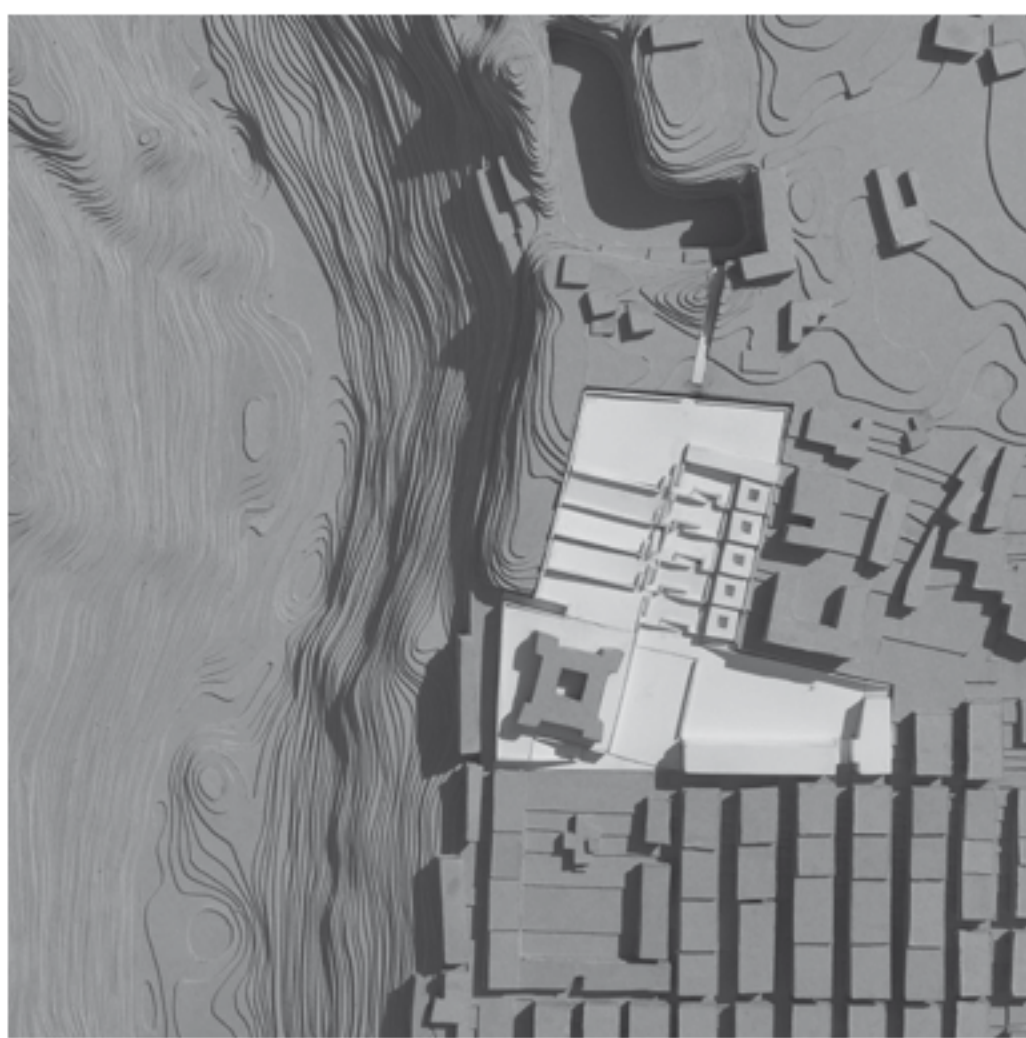


Residents and equipment (of daily use) appropriated privileged areas, due to its proximity to the roads that structure the neighborhood.



Tema 4
Housing and the Shape of the City

Francesco Defilippis
Politecnico di Bari, Italy





Tema 4
Housing and the Shape of the City

Sara Fois
Università degli studi di Cagliari, Italy



The Sant'Elia housing estate in Cagliari, the son of the urban experiments of the '60s and '70s, has always lived a state of urban blight, social decay, and a condition of "otherness" than the rest of the city. In response to his condition many redevelopment projects have been proposed. A part of project remained on paper, so they have caused a sense of abandonment in the inhabitants but they have, also, a sense of belonging to the place. The buildings were designed for a generic inhabitant people who live here have brought many modifications. These modifications, carried out to varying degrees of intrusiveness, express their needs and wants. Needs and want that original project and in the transformation have not been considered. The interpretation proposed "formal uses and appropriations" will highlight, at scale of the city, informal uses of space that in time have completed and modified the place. The appropriations are considered evolutions through which the project fits the time, to the changing needs of contemporary. The observation wants to focus on informal uses that have improved the quality of neighborhood life. These appropriations, which the practice of fishing along the coastline and in the small harbor, the layout of courses drawn from daily actions in the time of the settlements or the sports practiced by young people in the stadium parking, may represent the input reflection about the content of redevelopment project that develops the germs of the changes already undertaken by the inhabitants, already present in the place. This analysis method is developed on different scales, from scale of the city to scale of lodging, because this relationship is a fundamental part of the conception of these urban systems. Architecture and cities are, in this urban systems, closely related, in fact it is possible to talk about architecture of the city.



SIGNS OF APPROPRIATION | The Sant'Elia housing estate in Cagliari, Sara Fois

University of Cagliari | Faculty of Architecture | Phd thesis about strategies for upgrading the housing estates of the 1960s and 1970s



Tema 4 Housing and the Shape of the City

Nicola Parisi
Politecnico di Bari, Italy

Bringing the 'crowds' back to the city

an urban renewal plan aimed at seamlessly
integrating business and residential areas

The 'urban space' as a place for social aggregation par excellence has reached a crisis point. For centuries businesses, manufacturing and homes created dense urban settlement patterns with clear expansion areas where business life was enacted in squares, thereby attracting 'crowds'. Nowadays are places that have been emptied of those old 'crowds'. The latter now throng to out-of-town shopping centres, brand name outlet store malls, and large megastores. All of these in order to do

business' play city sound tracks, in a manner that is often kitsch. One is therefore losing that smooth blend between different functions and, consequently, between different interests, both public and private. The ball has passed exclusively to private business which is taking the shapes of spaces away from the city. Nowadays those noisy squares are often lacerated, desolate and frighteningly silent. People live shoehorned in little boxes, and to meet each other they need another place which emulates the city

they no longer have. Can modern planning rejuvenate qualities that are part and parcel of cities such as the integration between public and private spaces? Often in city considerable empty spaces can be identified near the modern urban fabric. These grey-looking non places' have an explosive urban potential. Since these are free areas, it is possible to fully exploit the subsurface for locating parking areas, which would usefully allow innovative districts to be built on the surface where homes and businesses merge into a renewed urban formula which will bring the 'crowds' back into the city.

Case study: Bitonto (Ba)

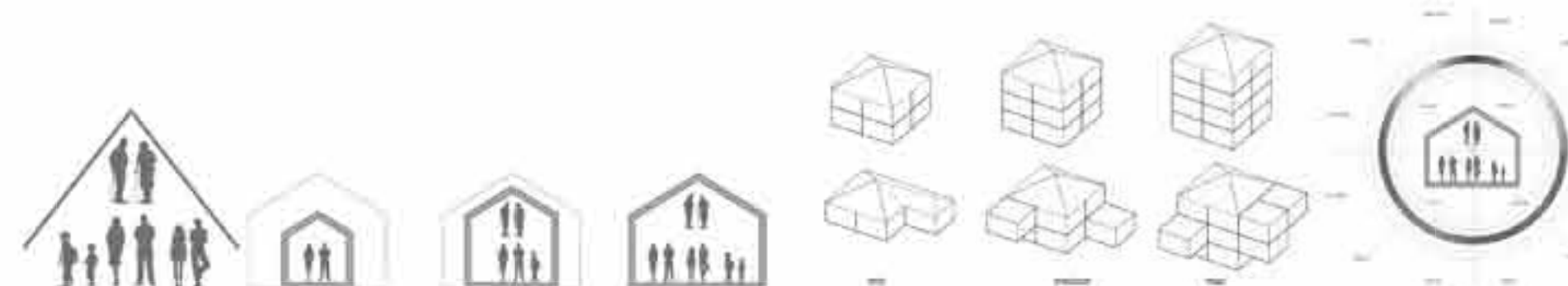
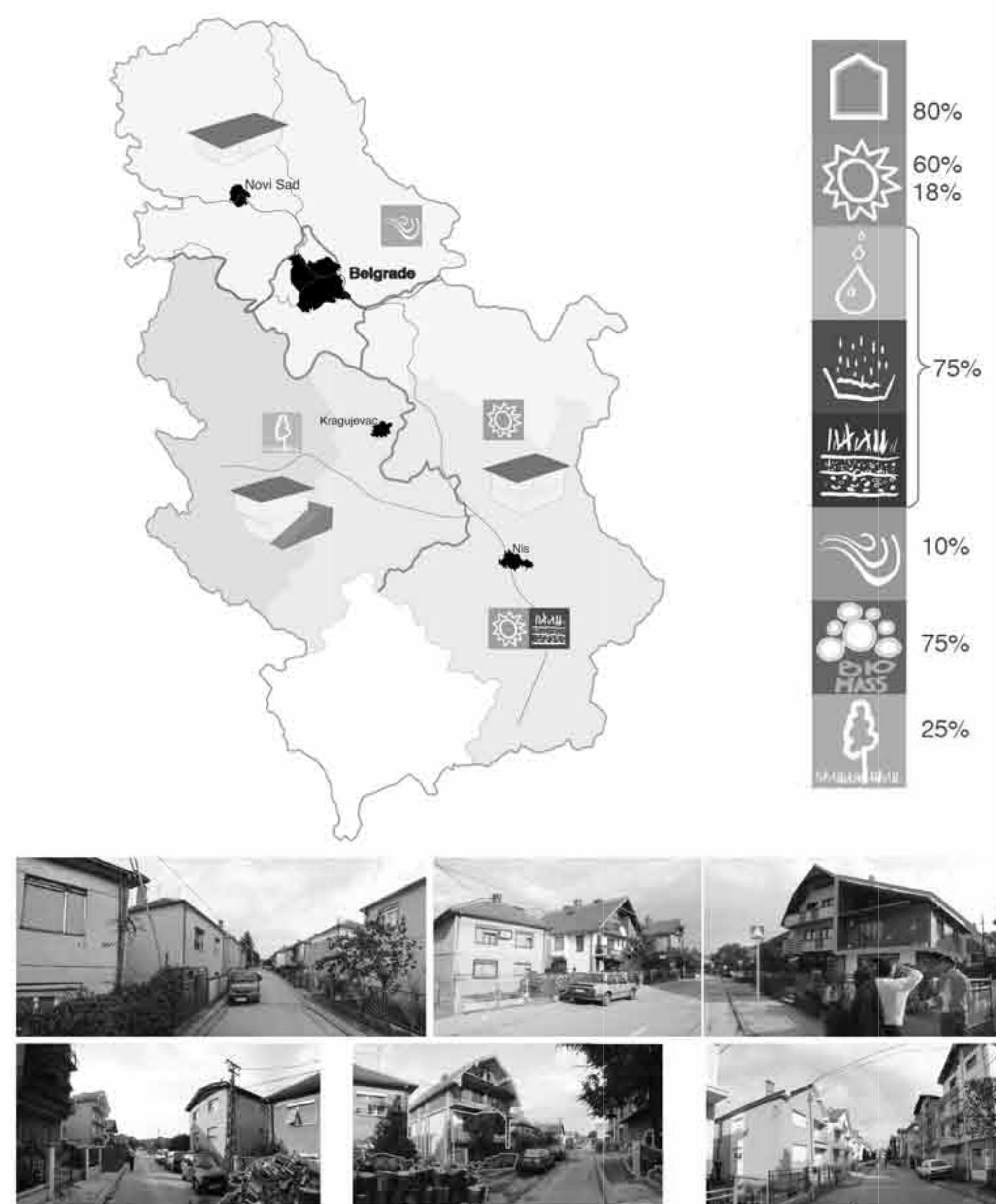


Tema 4 Housing and the Shape of the City

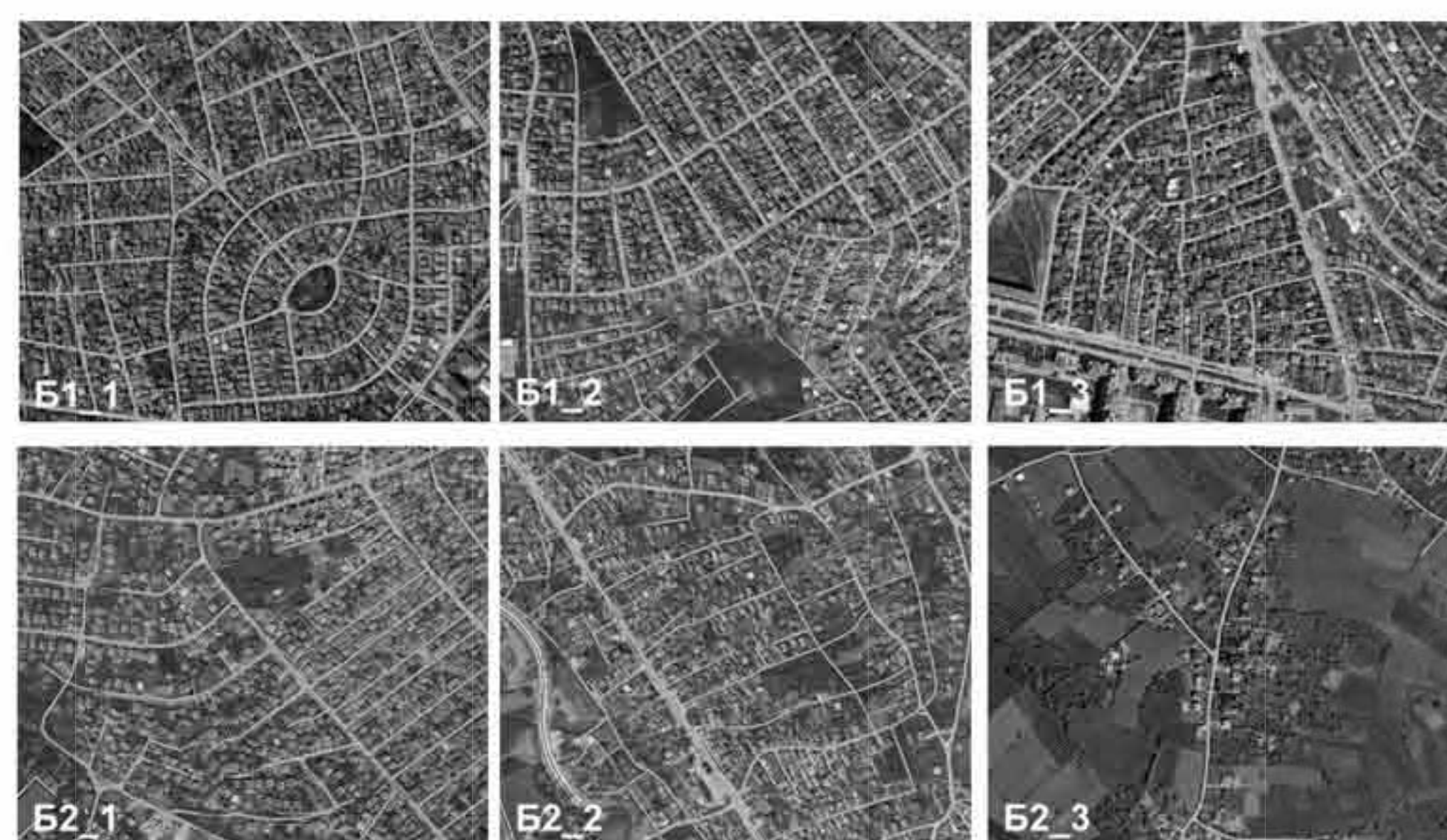
Milan Stamenkovic
Moscow Institute of Architecture (State Academy),
Moscow, Russia

The reorganization of low-rise housing blocks in Serbia comprising the new energy technologies.

This article is devoted an adaptive reorganization of low-rise housing blocks in peripheral areas of big cities in Serbia. It is also regarded the possibility of the integration of new energy technologies and the



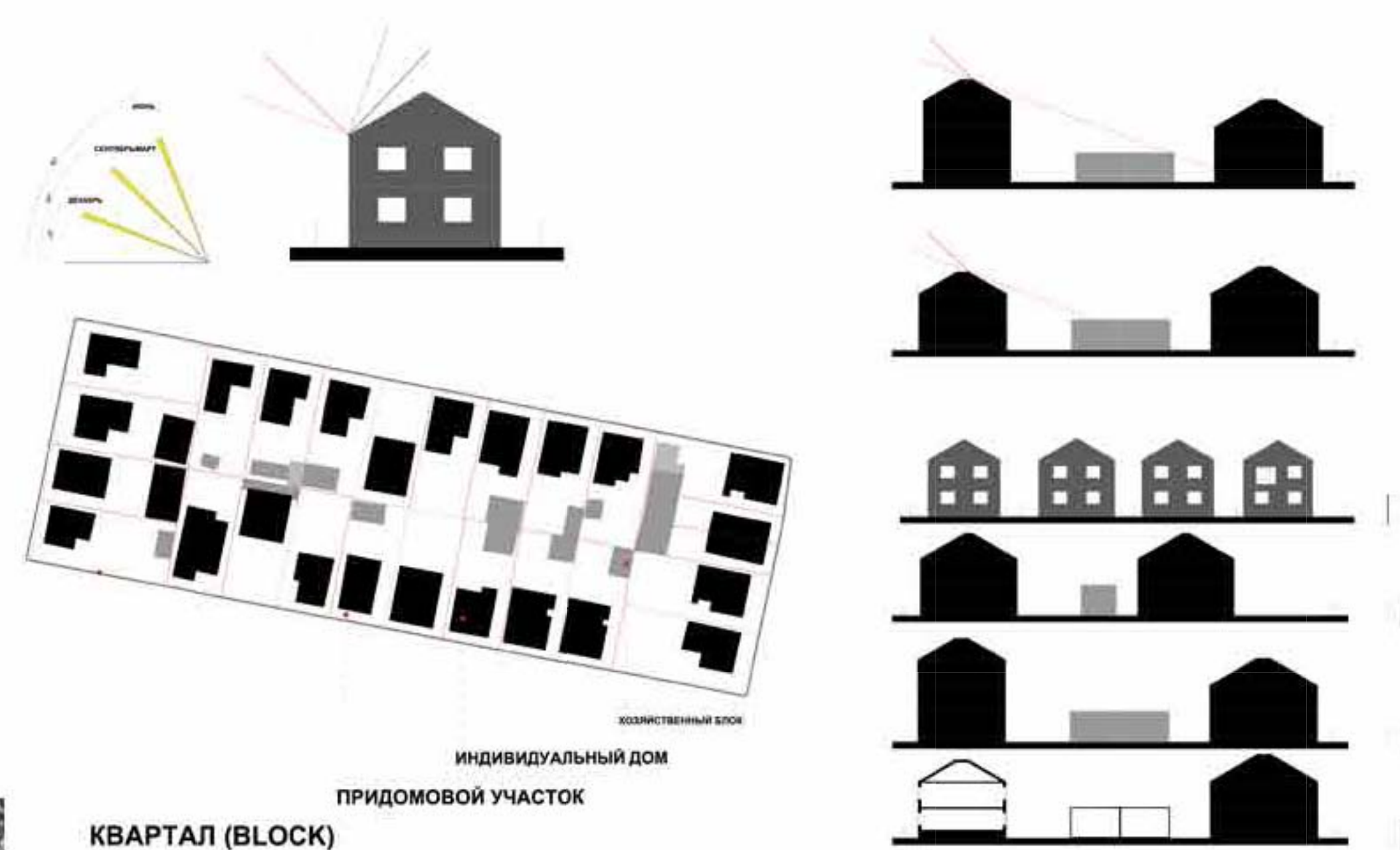
The spatial structure of Serbian cities has its own character. A fairly wide ring of the low-rise residential development with private neighborhoods usually surrounds the city centers. The great majority the population is oriented on the life in individual, multi-family housing defined by many factors. The sociological and economical peculiarities of the country development are confirming this steady settlement type remain in near future. The bulk of private houses, constituting more than half the housing stock were built the 1960-1970s. The unification of residential development is leading to a loss of national specific, especially taking into account the influence of climatic factors in different regions of the country.



It is clearly formulated demand within the concept of sustainable development and in the architecture and urbanism causes a new look at an object and to find principles and tools available to resolve the problem. Today a society is oriented at formulation of a new character and principles of life, in particular, the transition to alternative, renewable sources of energy.

One of specific aspect of architecture as a profession is in focusing at a solution of complex multifactorial problems. In the XXI century the boundaries of profession are greatly expanded. It is the necessity to create the architectural objects obtaining the new quality characteristics within careful attitude to the environment. This circumstance is forcing us to use life-support technologies as the form creative factors. The building shape and form is getting alive under the influence of new energy saving and life-supporting technologies. It looks like a living organism dynamically opening to meet the heat and sun and having the mechanisms to protect against adverse effects. The various technological solutions allow us to have different look at the relationship between architecture and natural environment. Instantly, it is not only question of protection themselves from climate impacts, but also question of getting use of its energy potential.

Today are acquiring the investigations closely connected with energy potential use characteristic for any territory. It underlines the possibility of future implementation of the results in design and reorganization of existing architecture structures.

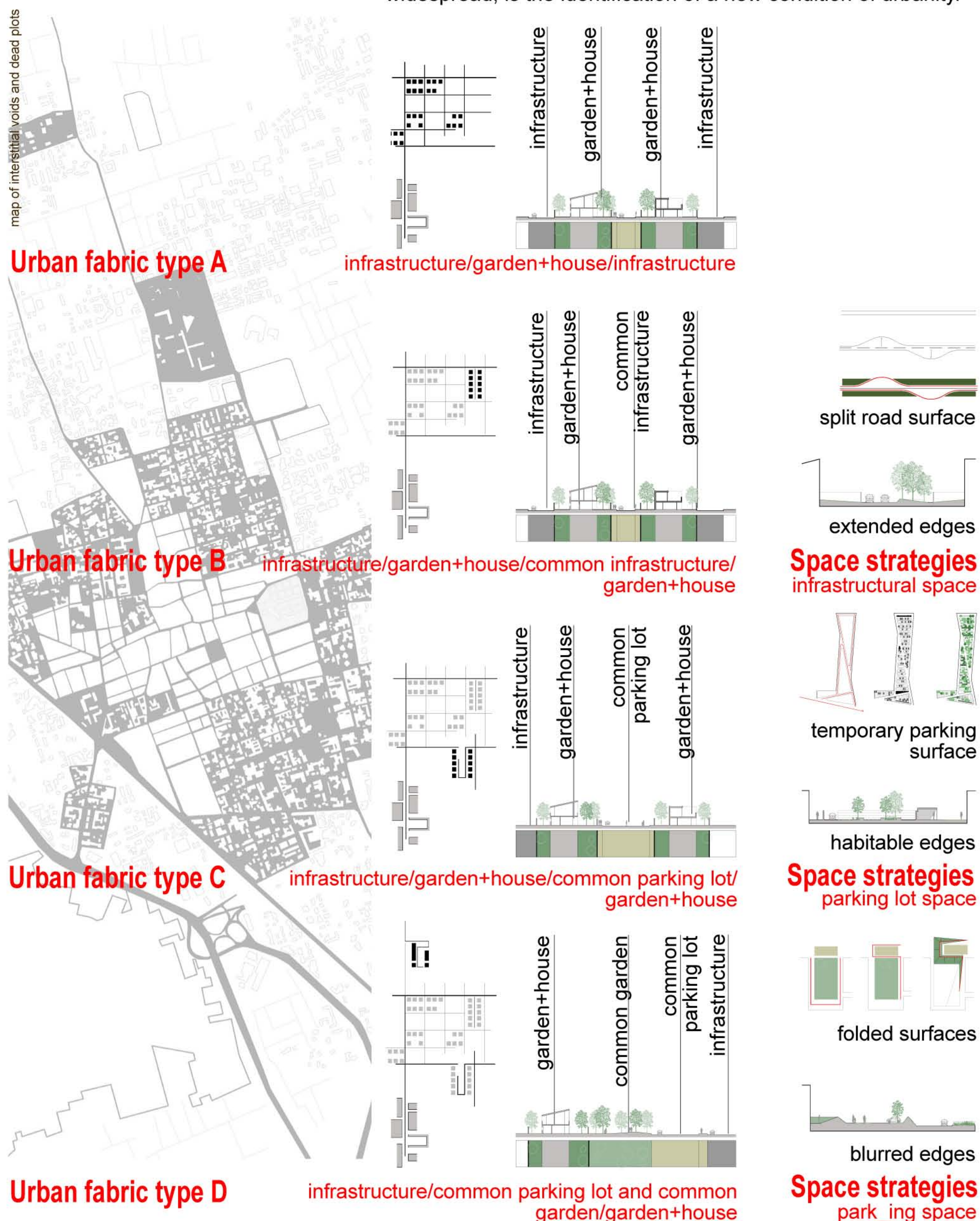


In such a case it's getting relevant a task of reorganization of the residential blocks by integration of the houses with traditional shape and structure with use of energy-efficient technologies. This task of restructuring involves three levels of the activities comprised of use of inner block areas, three-dimensional structure of the houses, the changes of surface properties of materials and details of architectural objects.



WHICH URBANITY ?

A crucial issue, which applies to new developments on the outskirts of towns and settlements within the territory of a more widespread, is the identification of a new condition of urbanity.



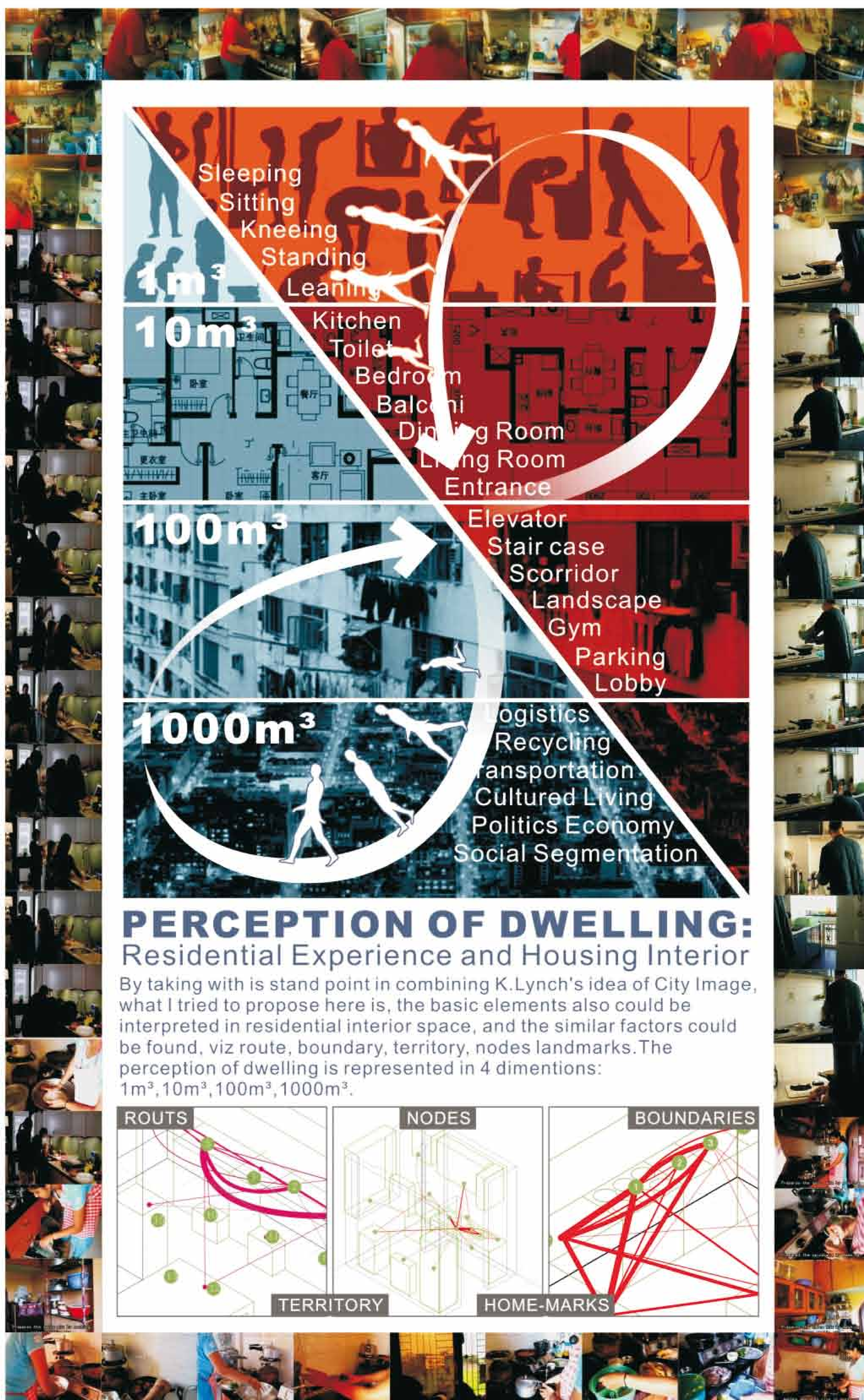
The product of this constant sum of enclaves, residential and other functions, is wasteful sequence of spaces, as parking lots, open spaces that are required to operate the contemporary city, that can become a resource, given their essence from the interstitial and ambivalent between inside and outside of these enclaves, a new contemporary urban poché.

In the past few years, a new generation of housing ensembles has emerged, building a new density and a different sociality. A new principle of urbanity can arise from the interpretation of the shape of these connection spaces, within the residential development, as part of more extensive morphological that determines the quality of the urban landscape, identifying them as a place of change of design strategies and regulations, according to criteria of economic and environmental sustainability.



Tema 4
Housing and the Shape of the City

Lei Wang
Aalto University in Helsinki Finland





The Venetian *casa in linea*: a current model

The sixteenth-century Venetian *casa in linea* is an evolution of the serial type, and though strongly rooted in the context in which it was developing, has in itself the characteristics that it allows us to recognize as a universal model and most importantly, current. In this particular typological residential model the elements are not row houses: each member of the series includes two dwellings, variously overlapped, but completely independent with road access and vertical distribution.

Different aspects characterize the *casa in linea* and relate not only to the distribution of the individual rooms, within the unit, but especially the way in which individual accommodations relate to each other, while maintaining their individuality, by the definition of the building architecture in its entirety.

These systems report that they use some devices: the entrance, the so-called double staircases or "*leonardesche*", the *portego* and finally the solution of the head.

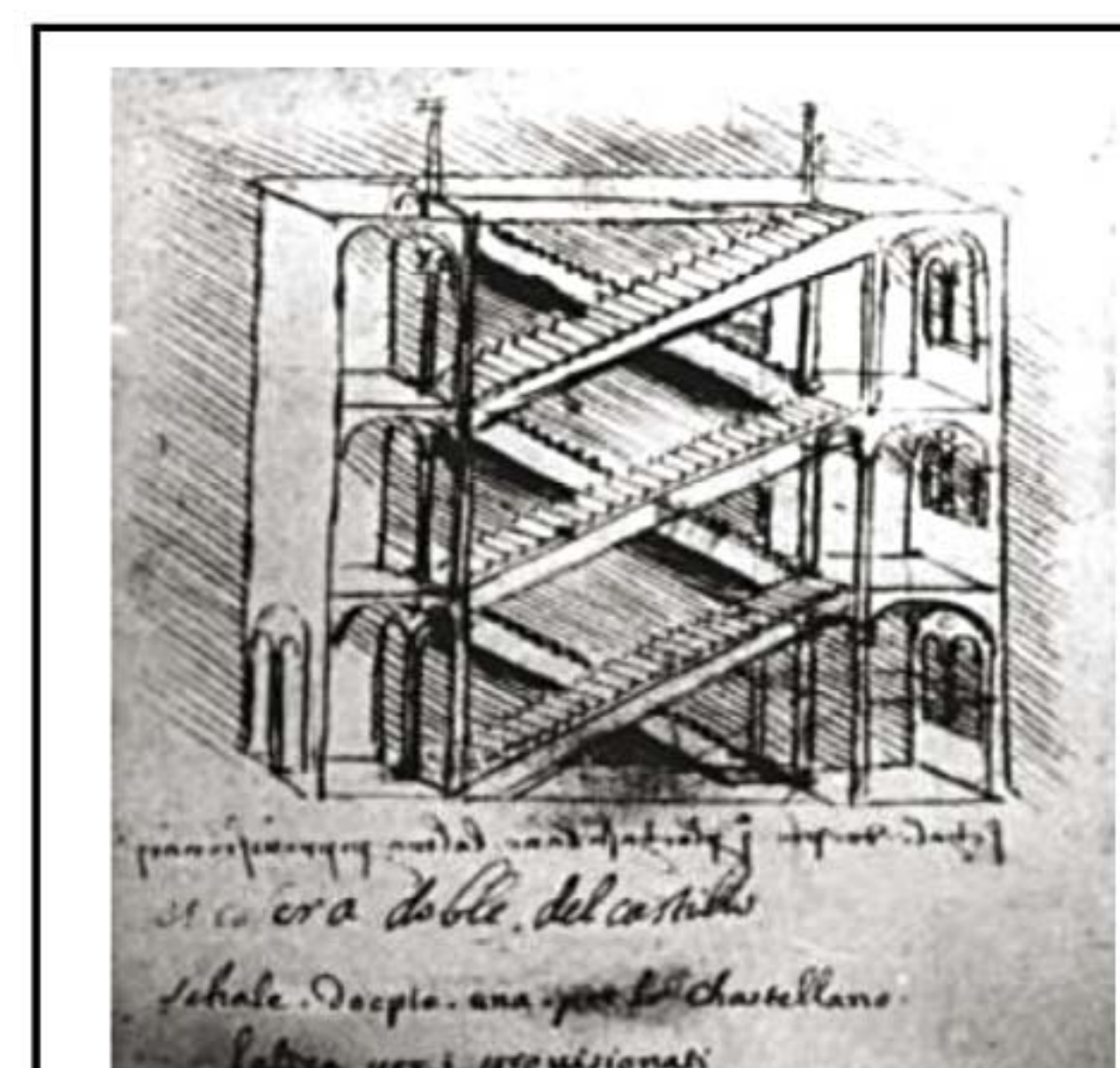
Although labelled as minor construction, it has actually, in some cases, resulted in buildings defined as "palaces" by the efforts deployed for the figurative and for the dimensions, and has interested architects like Jacopo Sansovino but mostly responds to needs without time. It is, in fact, the universal desire to live in an "environment" where family life can exist secluded and secret, but at the same time with dignity and exterior "*decorum*".

The *casa in linea* is the answer to these requirements: the door and hallway entrance were detached, along with the staircase whose ramps allow, directional crossing on opposing ways, and saving of area and volume but, especially, allowing the illusion of an entire dwelling, which was divided on several levels, and was important for the size and

external appearance of the complex. The double staircase, realizing the independence of the distribution paths in a small apartment building, ensured the peculiarities of the individual private house. The service rooms on the ground floor and first floor mezzanine allowed a separate work area from home; the *piano nobile* was superimposed for housing and on the mezzanine floor of the attic there was a separate place for the servants.

With regard to the horizontal distribution, the plan was formed from the *portego*: main room with the double facing, which, was bounded by two parallel walls which allowed access to side environments (usually two or three) eliminating corridors and all of the other elements of distribution of the spaces. With regards to the external appearance of the complex, this was usually quite impressive, punctuated by the repetition of *trifore*, *bifore* and *monofore*, often made richer by the colour of ornamental or painted graffiti, which bound the opening spaces horizontally and vertically and which required well-cadenced rhythm of chimneys.

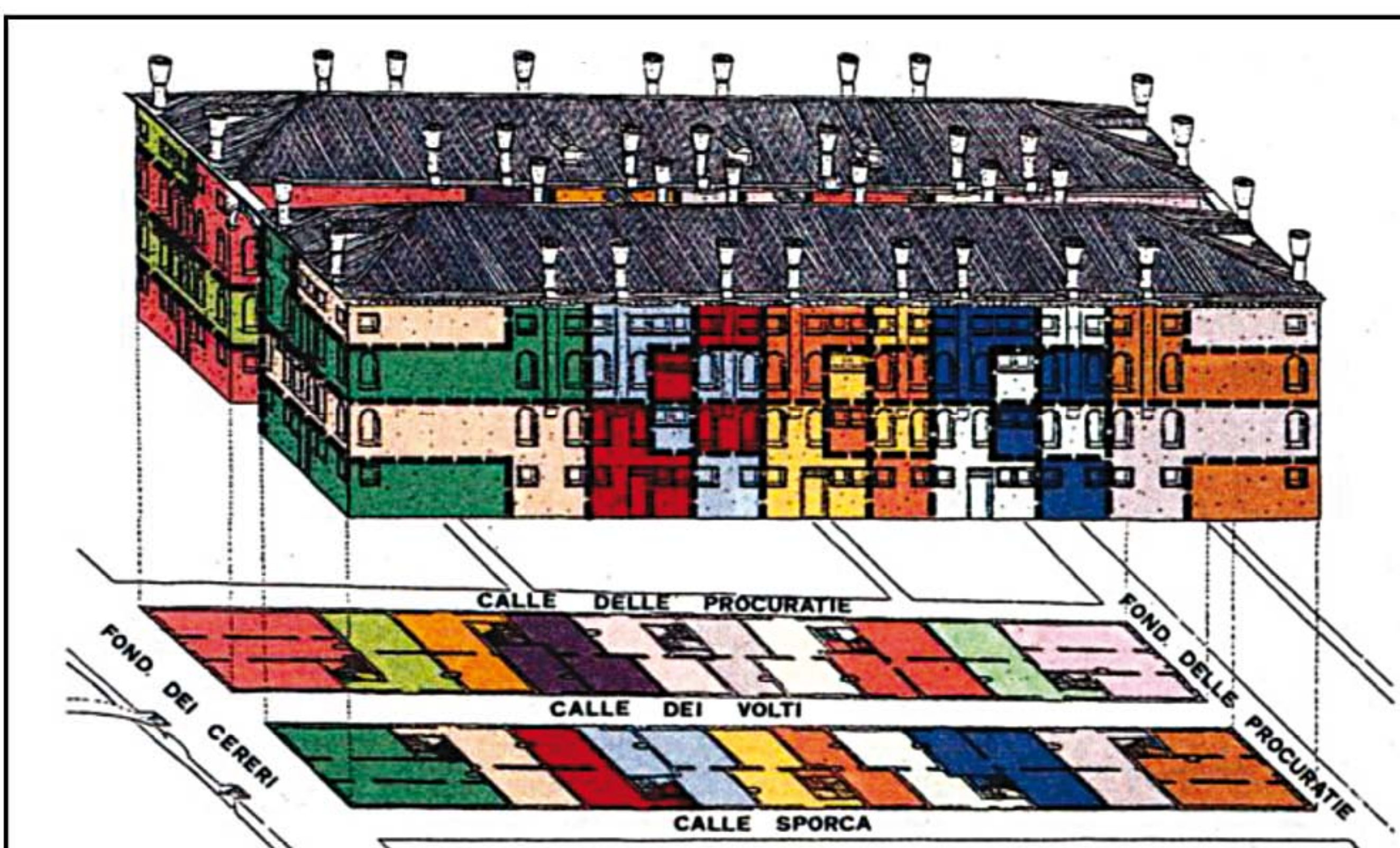
In many *casa in linea*, built between the XVI and the XVIII centuries, there is a proven



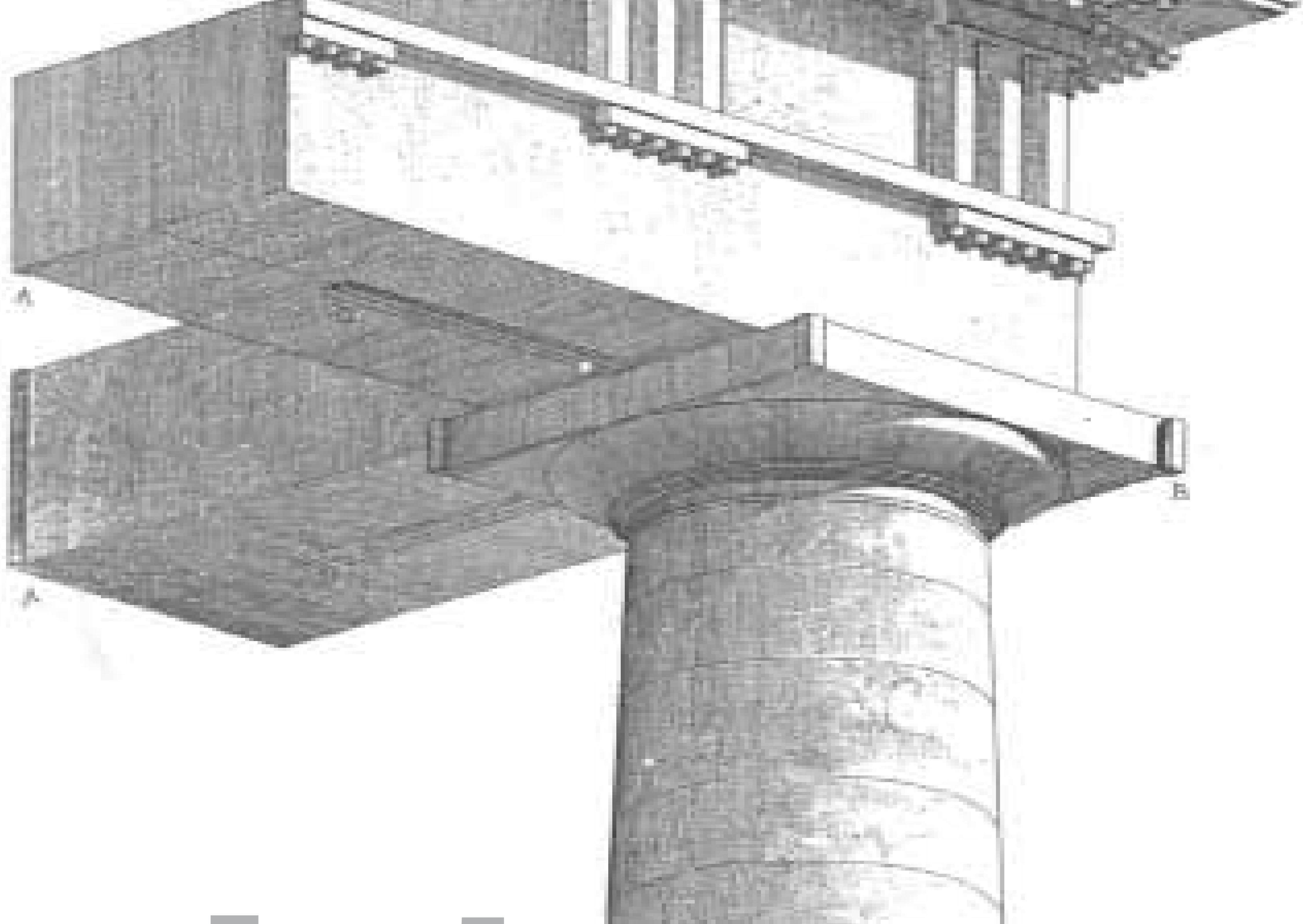
Leonardo da Vinci, Codice B, (1468), fol. 68v.

solution in which the unit construction terminal of the house itself is rotated 90° taking on the appearance typical of the Venetian halls tripartite, with the *piano nobile* and *polifora*. It should be emphasised that this artifice also implies the rotation of the structure of the building, i.e. of bearing walls and ceilings, and it was always in the presence of particularly significant space.

Thus, at the same time, a deeper relationship between internal and external, to "close" the composition of long fronts, without leaving any possible rise to recurrence and preventing the modification of the installation space.



An example of *casa in linea*; distribution of housing units.



Tema 5

Infrastructure Networks and Landscape



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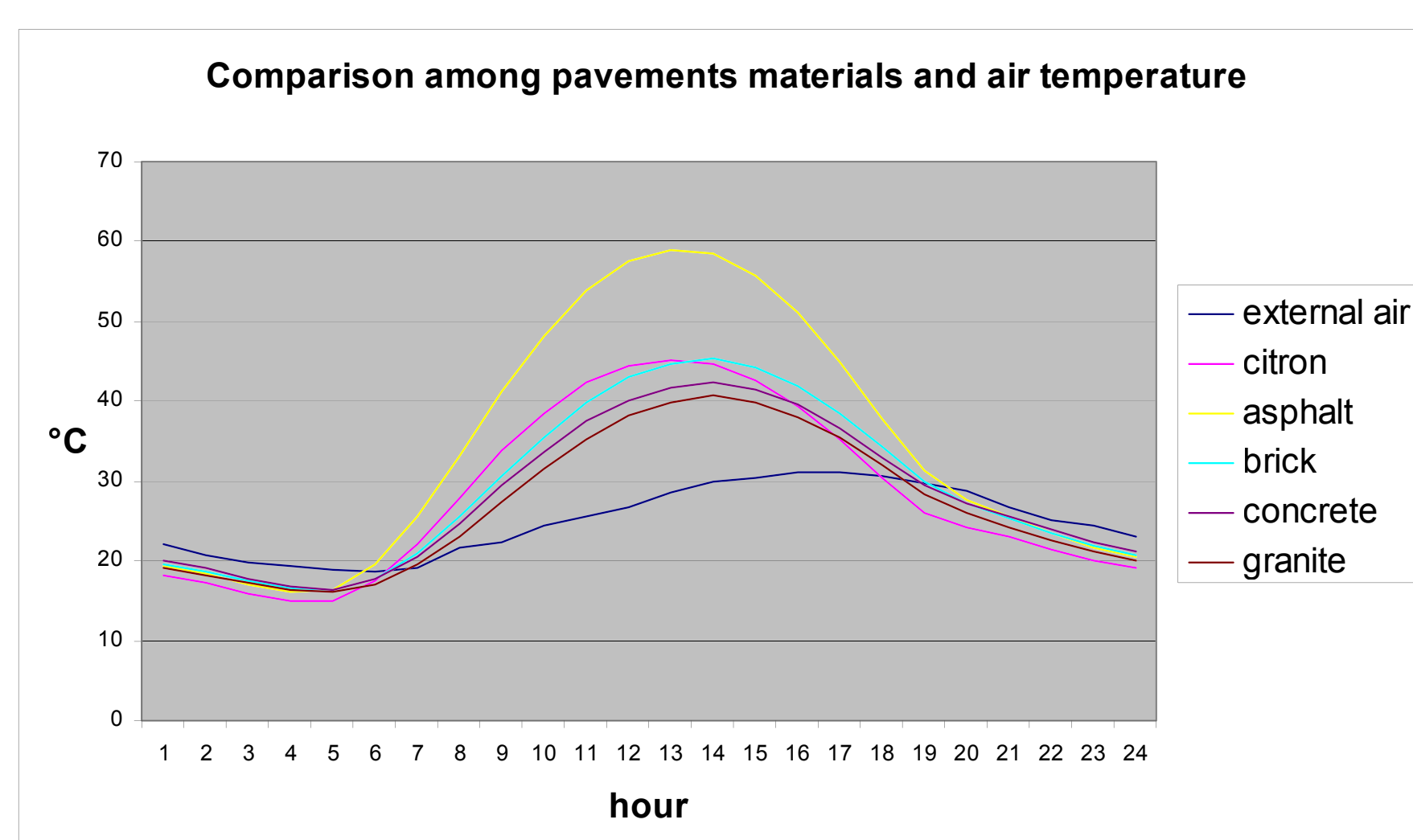
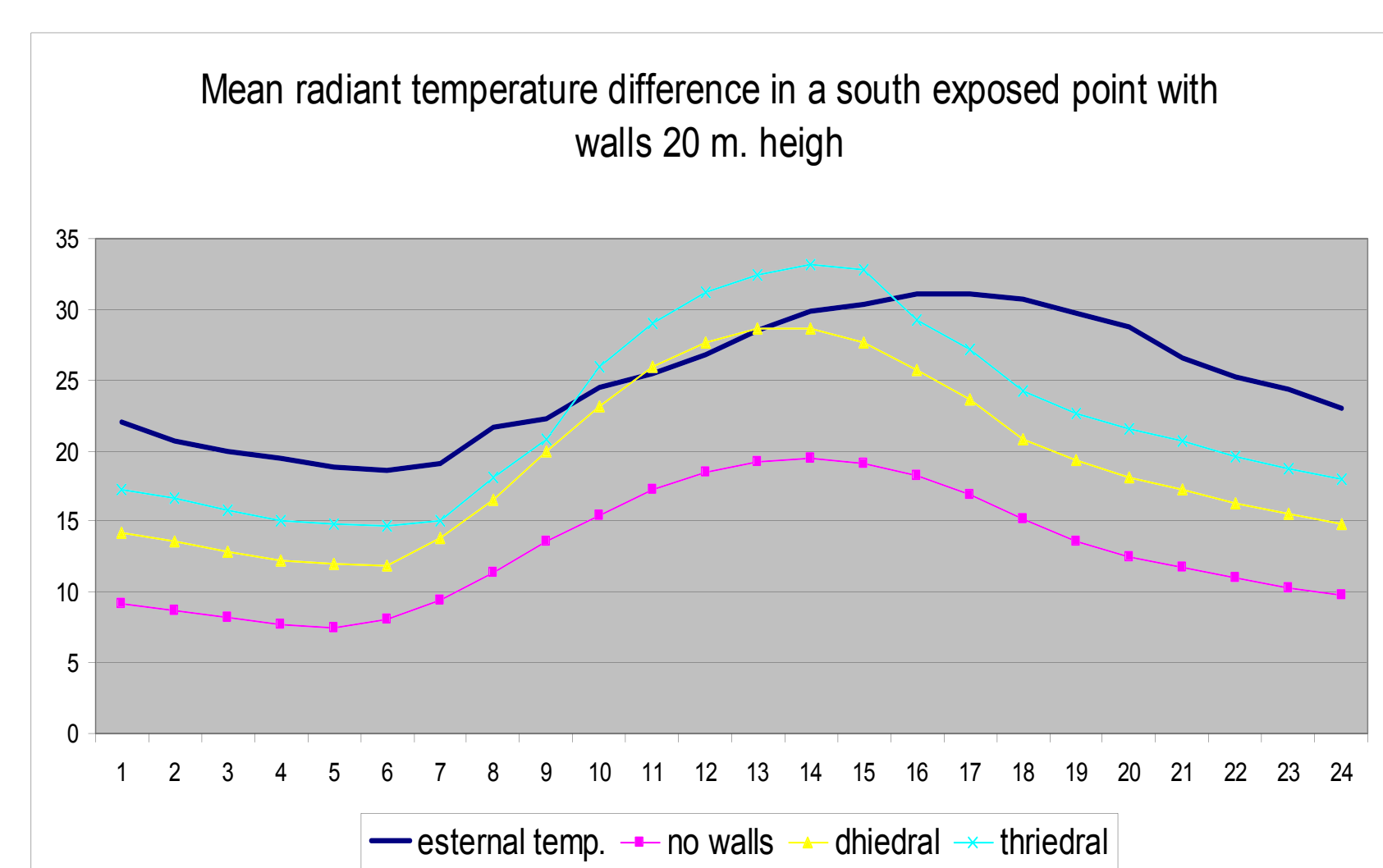
Valentina Dessì Politecnico di Milano – Dip. BEST

Energy performance of urban materials for the changing city

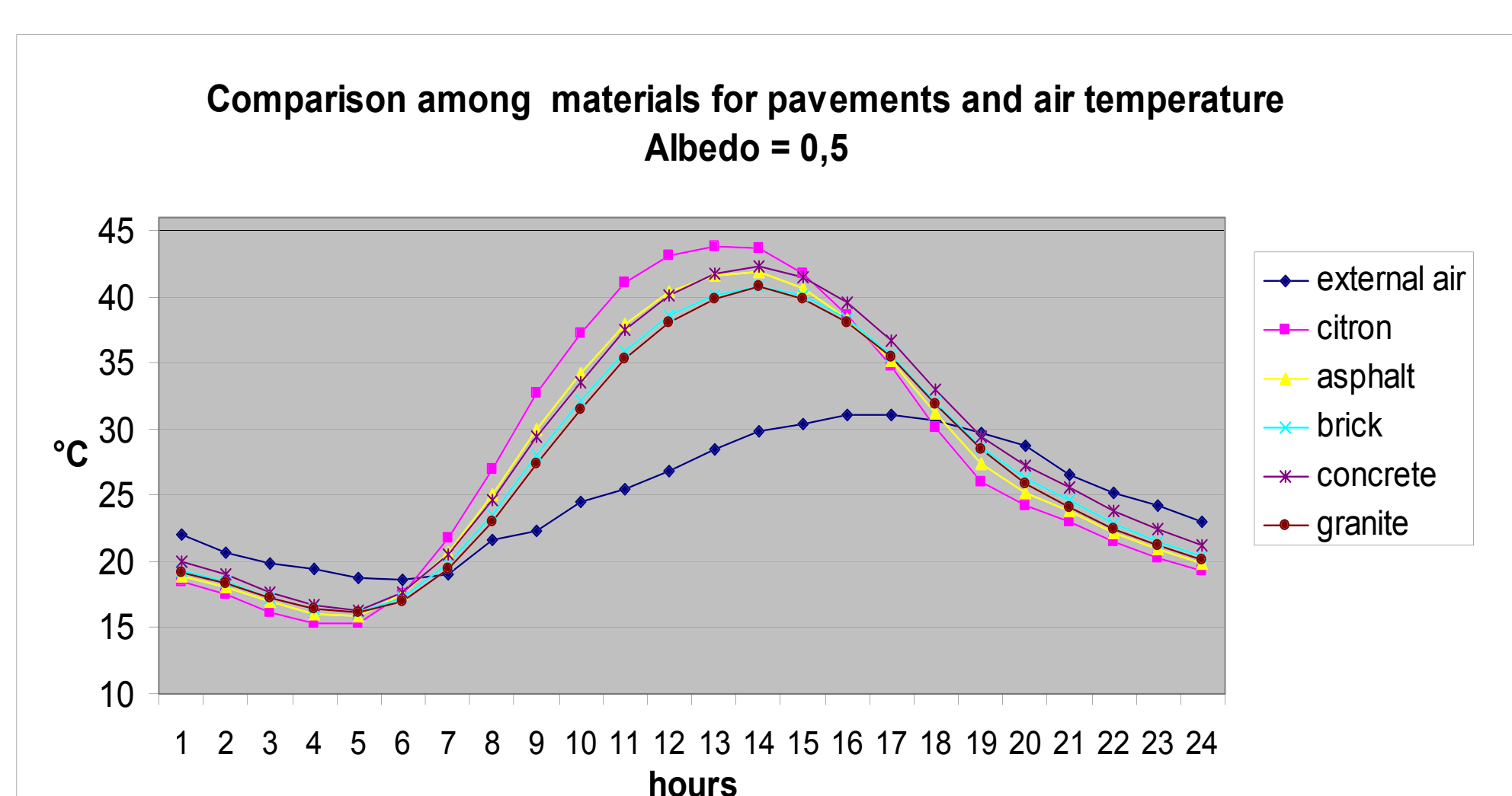
The poster shows the influence of urban pavements and building facades materials on the open spaces environmental performance and on thermal comfort conditions.

Simulated models are: trihedral configurations, that represent microclimatic niches inside squares (like closed angle), dihedral configurations representing the area of the street close to the façade

open space that can represent the centre of a big square not influenced by the presence of facing building walls.



Differences among the materials in open space are due to the physical properties, like albedo, thermal capacity and density.

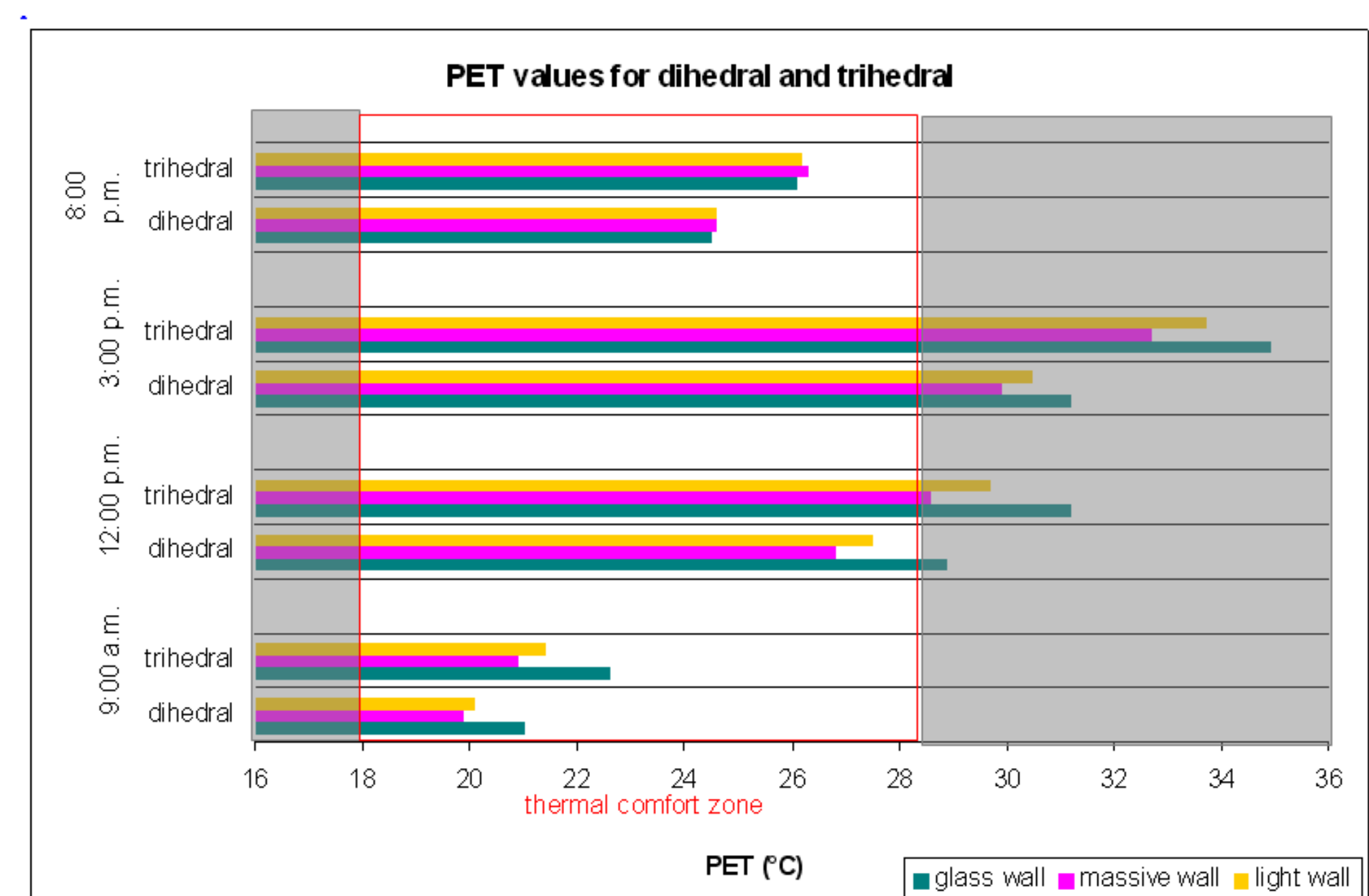


Comparison among materials with the same albedo value. The albedo is the most influencing characteristic as the simulation with the realistic albedo values confirmed

Thermal comfort was considered in terms of PET.

The graph considers the dihedral and trihedral with facing walls 20 metres high and the analysed position 10 metres far from the wall.

It is strongly recommended not to use glass wall and to be careful with the light wall too. Massive structures have the best performances.





Photovoltaic systems as tool for creation architectural concept and Clean Energy Source

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Abstract

The issue of reducing energy consumption and fuel are increasingly gaining prominence. Using renewable energy is one of the necessary road to sustainability, the achievement of ecological principles and the need for environmental protection and improvement of both local and global living conditions on Earth. Solar radiation is an inexhaustible source of energy. It is therefore necessary to create conditions and opportunities for its utilization.

The article refers to the possibilities of integration of PV systems in the architecture - in the construction, reconstruction and revitalization of family residential houses and apartment buildings, civic amenities, buildings for agricultural and industrial production - in their various forms of application into the roofs and facades. The value of the building multiplies effective integration of solar systems directly into the facade elements of windows, shading systems, railings, awnings, overlapping courtier, foyers, halls, connecting roads, skylights, roofing pitched and flat roofs.

In all these applications, the price of photovoltaics should be considered not only as an energy generating source but also as a substitute of building constructions.

The knowledge of the principles of this progressive form of design is an essential precondition for a quality-driven and responsible approach to current architectural concepts, offering the perspective of sustainability, attractive appearance and unconventional design.

There is no doubt that photovoltaics is a booming technology and one of the most promising sources of renewable energy.



AquaCity Poprad - Aquapark, Slovakia, authors: P.Kučera, F.Rubáš, ARCHSTUDIO (CZ), Relaxation Pool Sapphire Blue, 2007 (fi. Ingsteel, Schuco International, Solarklima)



Student work – Study of Projects using photovoltaics, authors: V.Hain (EcoFarm, 3.year), J.Ondrašina (Restaurant, 4.year), Bc. Z.Procházková (Dance Theatre, 5.year)



Tema 5
Infrastructure Networks and Landscape

Payman Sadeghi
University of Wisconsin Milwaukee, U.S.A.

Simulation Software Application: Analyzing Energy Utilization Intensity of Architectural Design Options

Payman Sadeghi, Michael D. Utzinger

University of Wisconsin Milwaukee, Milwaukee, Wisconsin

Abstract

Architectural designs, in the past, were usually integrated with contextual climatic surroundings to enhance comfort conditions. Although modern architecture also aimed at increasing human comfort level, ecological consciousness was less considered in the process of architectural design. Today, integration of energy management into the early stages of architectural design, as a function of ecological/sustainable consciousness, is a paradigm of the contemporary architecture and of crucial concern. This paper intends to evaluate impact of different design options on the annual energy utilization intensity (EUI) of buildings. TRNSYS, transient systems simulation program, was used to simulate a sample module in a hypothetical building with six design options in three typical climate conditions of Minneapolis, Atlanta, and Phoenix. These six variables were: "Orientation", "Amount of Glazing", "Number of Panes", "Shading", "Wall Insulation", and "Occupancy". The result of the sixteen runs from the simulation program has been interpreted through a quantitative approach. Ultimately, the impact of each variable, for each of the three climates, will be elaborated in the three following sections: the module's annual EUI, heating/cooling, and its associated economic analysis.

Keyword: TRNSYS, Simulation, Ecological Design Process, Architectural Design, Energy Utilization Intensity, Passive System.

Introduction

Architectural designs, in earlier times and in various cultures, were typically integrated with contextual climatic surroundings in order to enhance comfort conditions. With an initially constructive mentality, modern architecture also aimed at increasing human comfort level. However, ecological consciousness was less considered in the process of architectural design, partially, due to the increasing use of high-tech mechanical and electrical systems in buildings. Nowadays, enhancing an ecological/sustainable worldview is, no doubt, a fundamental goal for architects, and it is critical to integrate this theoretical framework into the early stages of every aspect of design. An efficient design rooted in sustainable architecture criteria diminishes built environment's dependency on the exhaustible energy sources, and instead of these sources, non-loss energy resources such as sun, earth, water and/or wind could be employed to supply the built environments' resource demands. Energy management, thus, has been one of the essential concerns and paradigms of the contemporary architecture.

Parallel to these concepts, advanced computer technologies and software are available for integration in sustainable design processes. Simulation software can be employed to validate or evaluate decision-making and design process in order to lower the energy demands of built environments. Yet, it is crucial to investigate the potential roles that the integration of passive system solutions as well as simulation software can play from early stages to reduce the necessity of high-tech systems and consequently lead toward a more sustainable result.

Today, cooling, heating, ventilation, and lighting are typically provided by the energy expended through highly developed mechanical systems. These high-tech systems are generally "added on" to the buildings once the location, orientation, adjacency, form, and materials have already been decided. This process often results in greater consumption of energy, and accordingly, depletion of the natural resources in the environment. By considering environmental performance criteria in early design stages, architects can decrease the need for high-tech systems and reduce energy demand. As Donald Watson argues:

Had energy opportunities been pursued in the design of the United Nations Office Building in New York City, it might not have become an east-west facing block with large expanses of unshaded glass. Had it been turned instead to face north-south, with the south façade shaded by relatively modest overhangs similar to the brise-soleil that consultant Le Corbusier originally proposed, its energy load would have been reduced by as much as one-half (1994, p.4).

This paper explores how and to what extent diverse decisions made in the process of architectural design can influence the annual energy utilization intensity (EUI) of buildings. In the following sections, the assumptions made to simulate a portion of an assumed building will be explained in detail.

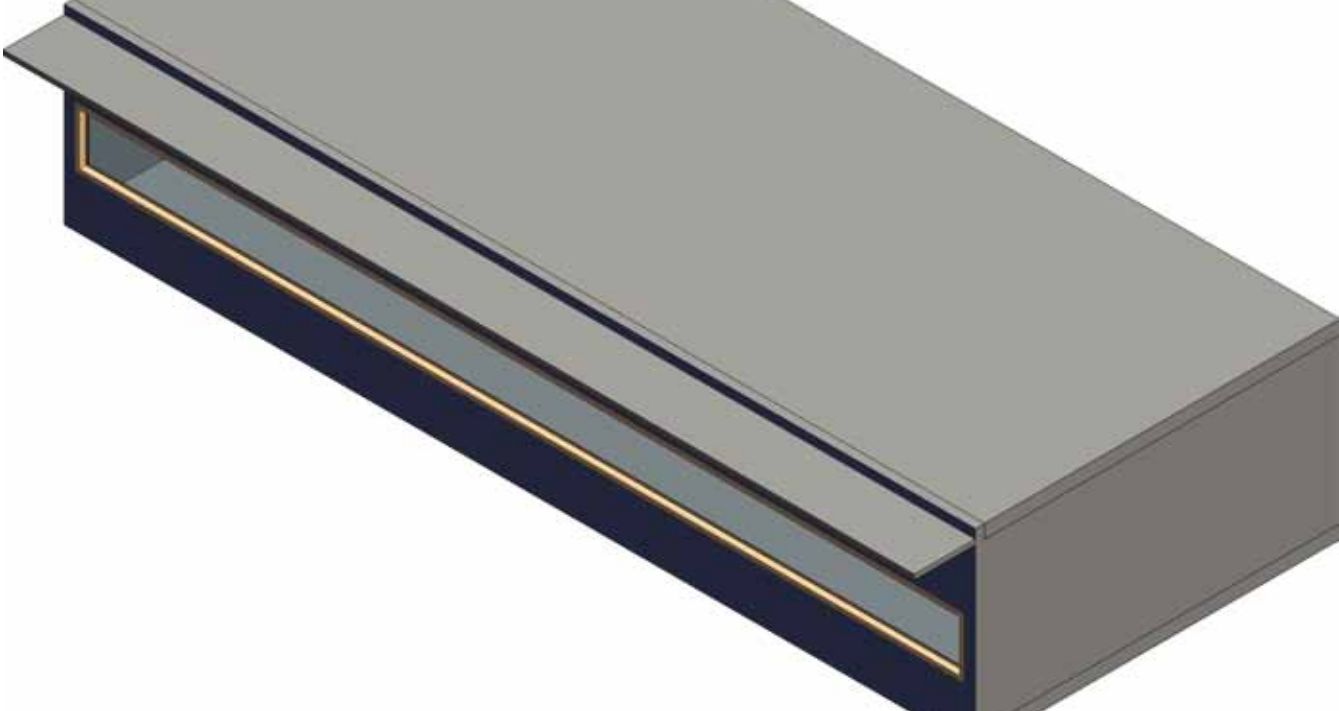


Fig. 1: sample module in a hypothetical building

Variables as different design options

Six examined variables consist of orientation, amount of glazing, number of panes, shading, wall insulation, and occupancy. Hypothetically, each of the variables is intended to have two levels which can, mainly, be considered as either a more energy efficient or less energy efficient decision made by the designer. For ease of identification, they are indicated with the sign (+) or (-) respectively (Table 1). Beneath, various aspects of these six variables are described:

Variables	1(Orientation)	2(Glazing %)	3(No. of Pane)	4(Shading)	5(Wall Insulation)	6(Occupancy)
Values						
(+)	South	1/3 of Façade	Double pane	Well Designed	R-value = 20 m ² K/W	Office
(-)	West	3/3 of Façade	Single pane	None	R-value = 5 m ² K/W	Classroom

Table 1: Six considered variables and their value as

- Two levels for orientation are south (east-west elongated) and west (north-south elongated) since the optimal building orientation is, theoretically, recognized to be east-west elongated as opposed to north-south elongated in terms of sunlight control.
- One-third of the façade has been suggested as proper glazing percentage whereas floor to ceiling glazing is another option which would "potentially" cause a huge amount of energy loss.
- Obviously, a double pane window is assumed to be an appropriate option for number of pane compared to single pane that is rarely used in current architecture. The u-value of double pane window is 1.4 W/m² K, and u-value of single pane window is 5.68 W/m² K while the area of window would be 23.28 m² (19.40m x 1.20m) for 1/3 of façade and 69.84 m² (19.40m x 3.60m) for 3/3 of façade.
- For the sample module, two following shading levels are analyzed: a well-designed overhang and an option with no overhang. Considering the solar altitude angle for the three cities in winter (December, 21th) and summer (June, 21th), optimal depth of a horizontal overhang above the window is designed which is almost the same for Atlanta and Phoenix (Table 2). As shown in (Fig. 2) the optimum depth for Minneapolis is 1.35 m. Although, based on altitudes, a depth of 0.8 m seems to be sufficient for the other two cities, an overhang with the depth of 1.35 m functions more effectively as TRNSYS illustrated. Therefore, well-designed overhangs in the three cities are considered to be 1.35 m.
- Likewise, two types of walls with the R-value of 20 m² K/W (U-value of 0.05 W/m² K) as a proper and 5 m² K/W (U-value of 0.2 W/m² K) as an improper wall insulation are employed, and finally,
- All the mentioned variables are examined for the occupancy of both an office and a classroom. The office has 16 employees plus 16 computers and the classroom has the capacity of 80 people with a computer for the professor. Both the office and classroom are scheduled to be open from 6:00 AM to 6:00 PM during the weekdays and close on the weekends.

Cities	Minneapolis (°)	Atlanta (°)	Phoenix (°)
Seasons			
Winter Altitude	22	32	37
Fall Altitude	68	56	50.5
Summer Altitude	76	78	78

Table 2: The solar altitude angle for the three cities/design options

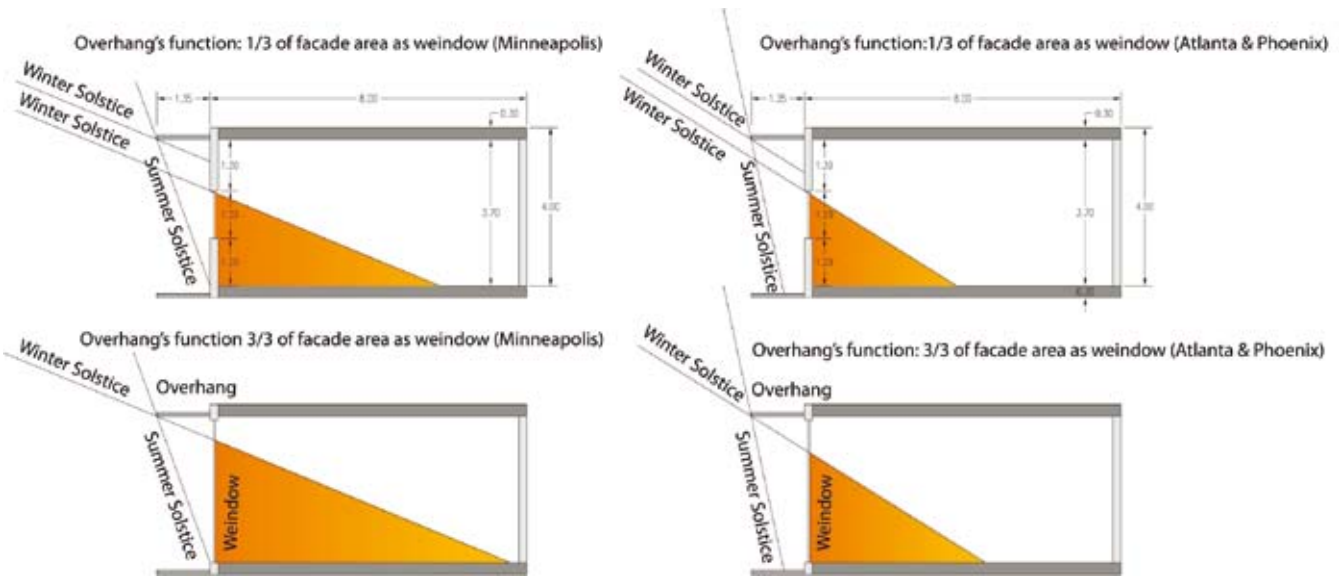


Figure 2: The optimum depth of overhang for Minneapolis (left) & Atlanta as well as Phoenix (right)

Climate

In order to specifically measure the impact of the six variables in various climates, three locations are chosen: Minneapolis (MN) as the representative of continental climates with cold winters and hot summers, Atlanta (GA) as the representative of humid subtropical climates with mild winters and hot summers, and Phoenix (AZ) as the representative of subtropical and climates with extremely hot summers and warm winter. Accordingly, Typical Meteorological Year (TMY2) data sets of National Solar Radiation Data Base (NSRDB) during 1961-1990 for these three cities have been used in TRNSYS.

Comfort conditions

Although comfort zone for human being could be different related to various climate, cultural, or mental characteristics of each person, in this study 20-28 degree centigrade (68-79 degree Fahrenheit) and 50% relative humidity is defined as the comfort zone. It means that mechanical system would work if it is colder than 20°C or warmer than 26°C in summer.

Heat Gains

There are three sources of heat gain considered in this simulation: people, computers, and artificial lighting, which would vary from office to classroom. Air change infiltration, also, is supposed to be 0.2 per hour. Since the window is not operable, there would not be any natural ventilation system in the building, and all efforts to get to the comfort zone are provided by a mechanical system.

Methodology

The methodology applied in this research is a combination of "simulation," done by TRNSYS, and "quantitative" approach for the interpretation of the outcome. In other words, the result from the simulation program has been set in a way that is explicable by "two-level fractional design for k variables and N runs in which the annual EUI for each run will be interpreted through a quantitative technique. Utilization of fractional factorials tends to decrease the number of runs and as a result experimental struggles. In this study the number of variables is 6, and the number of runs is 16 for each of the three climates. By eliminating confounding between effects of different runs, the total number of runs will be 48 that is decreased from potential 192 runs (3 x 2⁶) due to the exclusion of redundant runs (Table 3).

Run	1(Orientation)	2(Glazing %)	3(No. of Pane)	4(Shading)	5-Wall Insulation	6-Occupancy
run1	(+)	(+)	(+)	(+)	(+)	(+)
run2	(+)	(+)	(+)	(+)	(+)	(-)
run3	(+)	(+)	(+)	(+)	(-)	(+)
run4	(+)	(+)	(+)	(+)	(-)	(-)
run5	(+)	(+)	(-)	(+)	(+)	(+)
run6	(+)	(+)	(-)	(+)	(+)	(-)
run7	(+)	(+)	(-)	(+)	(-)	(+)
run8	(+)	(+)	(-)	(+)	(-)	(-)
run9	(+)	(-)	(+)	(+)	(+)	(+)
run10	(+)	(-)	(+)	(+)	(+)	(-)
run11	(+)	(-)	(+)	(+)	(-)	(+)
run12	(+)	(-)	(+)	(+)	(-)	(-)
run13	(+)	(-)	(-)	(+)	(+)	(+)
run14	(+)	(-)	(-)	(+)	(+)	(-)
run15	(+)	(-)	(-)	(+)	(-)	(+)
run16	(+)	(-)	(-)	(+)	(-)	(-)

Table 3: Two-level fractional design for k variables and N runs (K=6 & N=16 illustrated by grey color) Retrieved from Box, G. E. P., Hunter, W. G., & Hunter, J. S. (1978). Statistics for experimenters: An introduction to design, data analysis, and model building.

Simulation Results

There could be different approaches to interpret the simulation results, but in this research the impact of each variable, for each of the three climates, will be elaborated in three sections below:

- The module's annual energy utilization intensity analyses
- The module's Heating/Cooling energy utilization intensity analyses
- The module's annual economic analyses

A) Minneapolis (as the representative of continental climates)

- As illustrated in (Table 4), annual EUI for all the sixteen runs is extracted through TRNSYS. The most annual EUI (Qheat+Qcool) is related to the situation that all variables have the value of negative (-), which was thoroughly described in the previous sections. It shows that the maximum annual EUI for the module will be 164,697.797 kJ for the run1. The least, then, is when all the variables' values in a run are (+) which is for the run 16 with the EUI of 53,662.031 kJ. The variables' main effects, also, are indicated, and the results show that the variable of the glazing percentage in a cold climate similar to Minneapolis with the main effect of 56,366,753 kJ plays the most critical role in the annual EUI. The amount of annual EUI decreases by 64% as the window height decreases from 3/3 to 1/3 of the façade. This percentage has been calculated by dividing the main effect by the average of annual EUI for all 16 runs (56,366,753kJ / 87,981,810kJ). The orientation's main effect indicates that the module's annual EUI from choosing an inappropriate orientation (West facing module in a cold climate) to an appropriate decision (South facing) will be cut by 11%. Similarly, the module's annual EUI, related to number of pane, reduces from a single-pane window to a double-pane window by 44%. By a well-designed overhang, the module's annual EUI could be diminished up to 12%, in terms of shading. Surprisingly, from selecting an exterior wall with the R-value of 5 m² K/W to an exterior wall with the R-value of 20 m² K/W, the module's annual EUI, related to wall insulation, will decrease only by 7%. Finally, the occupancy's main effect demonstrates that the module's annual EUI will be cut by 11% from the function of classroom to the office.

Associated to the orientation, the run1 and the run16 are compared with the run16 and the run16a. The annual EUI decreases up to 11% when the orientation is optimum and the other variables have the value of (-) while it increases by 21% when the orientation is not optimum and the other variables have the value of (+). In the same fashion, it is 50% decrease vs. 80% increase for the glazing percentage, 38% decrease vs. 46% increase for the number of pane, 6% decrease vs. 21% increase for the shading, 1% decrease vs. 9% increase for the wall insulation, and 0% decrease vs. 74% increase for the occupancy respectively.

- As shown in the main effect of the variable's Qheat and Qcool illustrated in (Table 4), the orientation's main effect, from the east facing module to the south facing module, shows that both module's Qheat and Qcool are (+). As a result, the east facing module's Qheat is more than south facing module whereas the east facing module's Qcool is less than the south facing module. Considering the glazing percentage's main effect, the module's Qheat and Qcool from 3/3 to 1/3 of the façade are (+) and (-) respectively; both the Qheat and Qcool for 3/3 of the façade as window are more than 1/3 of the façade. The number of pane's main effect, from the single to the double-pane window, illustrates that both the Qheat and Qcool are (+); the single-pane window's Qheat is more than the double-pane window's whereas the single-pane window's Qcool is less. The shading's main effect from no overhang to the well-designed overhang shows that both the Qheat and Qcool are (-). Therefore, the no overhang's Qheat is less than the well-designed overhang's, and the no overhang's Qcool is more. Regarding the wall insulation's main effect from the R-value of 5 to the R-value of 20, both the Qheat and Qcool are (-); the R-value of 5's Qheat is more than the R-value of 20's whereas the R-value of 5's Qcool is less. At last, the occupancy's main effect, from the function of classroom to office, shows that both the Qheat and Qcool are (-); the classroom's Qheat is less than the office's whereas the classroom's Qcool is more. More information about the amount of a variables' effect in the best and the worst conditions, in terms of considering the other proper variables, is demonstrated in the appendix as well.

- Comparing the results of the sixteen runs in this climate, the difference between the best design (run16) and the worst (run1) is 131,095,766 kJ per year. Given that each kJ is 3600 kWh, and the average electricity fee per kWh in the United States is \$ 0.12, the amount of the module's saving could be up to \$ 4370 per year depending on the six variables' proper design (131,095,766 kJ / 3600) x \$ 0.12 = \$ 4370 . As the module's area is 980 square meters, the saving amount will be around \$ 4.46 per square meters or around \$ 0.42 per square feet.

B) Atlanta (representative of humid subtropical climates)

- The annual EUI for all the sixteen runs taken out by TRNSYS is illustrated in the (Table 5). The most annual EUI (Qheat+ Qcool) is related to the condition that all the variables have the negative value (-). This indicates that the maximum annual EUI for the module will be 128,222,868 kJ for the run1. The least, then, is for the run15 with the EUI of 41,286,596 kJ rather than the run16 that was expected to have the least EUI. Apparently, the reason is due to the wrong assumption that the appropriate orientation was expected to be the south facing module. Results show that the glazing percentage in this moderate climate with main effect of 44,766,470 kJ is, also, the most important factor; the range of annual EUI reduces by 54% as the window height decreases from 3/3 to 1/3 of the façade. The orientation's main effect indicates that the annual EUI from the west facing module to the south facing module is not different; the orientation is not an influential variable in this setting. This is the case for the number of pane as well since the module's annual EUI from choosing the single-pane window to the double-pane window is increased by 1%. In terms of shading, designing a proper overhang, though, can reduce the annual EUI by 18%. Having an exterior wall with the R-value of 20 in comparison to an exterior wall with the R-value of 5, which is related to wall insulation, only decreases the module's annual EUI by 2%. Ultimately, changing the classroom's function to the office for the occupancy, in this case, reduces the module's annual EUI by 27%.

Related to the glazing percentage, the run1 and the run16 are compared with the run16 and the run16b. The annual EUI decreases up to 43% when the glazing percentage is optimum and the other variables have the value of (-) while it increases by 57% when the glazing percentage is not optimum and the other variables have the value of (+). In the same fashion, it is 2% decrease vs. 3% decrease for the orientation, 3% decrease vs. 12% decrease for the number of pane, 16% decrease vs. 15% increase for the shading, 1% increase vs. 8% decrease for the wall insulation, and 11% decrease vs. 63% increase for the occupancy respectively.

- As shown in the main effect of the variable's Qheat and Qcool (Table 5), the orientation's main effect, from the east facing module to the south facing module, indicates that both module's Qheat and Qcool are (+); the east facing module's Qheat is more than south facing module whereas the east facing module's Qcool is less than the south facing module. Based on the glazing percentage's main effect, the module's Qheat and Qcool from 3/3 to 1/3 of the façade are (+) and (-) respectively; both the Qheat and Qcool for 3/3 of the façade as window are more than 1/3 of the façade. The number of pane's main effect, from the single to the double-pane window, shows that both the Qheat and Qcool are (+); the single-pane window's Qheat is more than the double-pane window's whereas the single-pane window's Qcool is less. The shading's main effect from no overhang to the well-designed overhang proves that both the Qheat and Qcool are (-); the no overhang's Qheat is less than the well-designed overhang's, and the no overhang's Qcool is more. Considering the wall insulation's main effect from the R-value of 5 to the R-value of 20, both the Qheat and Qcool are (+); the R-value of 5's Qheat is more than the R-value of 20's whereas the R-value of 5's Qcool is less. Finally, the occupancy's main effect, from the function of classroom to office, shows that both the Qheat and Qcool are (-); the classroom's Qheat is less than the office's whereas the classroom's Qcool is more. More information about the amount of a variables' effect in the best and the worst conditions, in terms of considering the other proper variables, is demonstrated in the appendix as well.

- Considering the results of the sixteen runs in this climate, the difference between the best design (run15) and the worst (run1) is 86,935,672 kJ per year. Therefore, the amount of the module's saving could be up to \$ 4572 per year depending on the six variables' appropriate design (86,935,672 kJ / 3600) x \$ 0.12 = \$ 2898. The saving amount in this climate will be around \$ 2.96 per square meters or around \$ 0.28 per square feet.

C) Phoenix (representative of subtropical arid climates)

- In this climate, the run2 has the most annual EUI with 203,624,075 kJ, and the least is referred to the run15 with 66,492,314 kJ (Table 6). Again, the reason is referred to the wrong assumption that the proper orientation was anticipated to be the south facing module; the proper orientation in this type of climate is a north-south elongated (east facing) rather than east-west (south facing). The glazing percentage is still the most critical one in this type of climate as well. The orientation's main effect is 2,574,834 kJ. This, interestingly, means that by designing from the south facing module to the west facing, the annual EUI will be increased by 2%. The glazing percentage's main effect of 88,806 kJ is the most significant variable in this climate. The simulation result shows that as the window height decreases from 3/3 to 1/3 of the façade, the annual EUI will be decreased by 53%. The number of pane's main effect, then, is 9,786,996 kJ which indicates that having the double-pane instead of the single-pane window cuts the annual EUI by 8%. The shading's main effect is 24,215,873 kJ which can reduce the annual EUI by 19% if the proper overhang is designed. In this type of climate, the wall insulation's main effect of the module is 888,806 kJ. Surprisingly, having the R-value of 20 for the exterior wall will increase the annual EUI by 1% in comparison to the R-value of 5. Finally, the occupancy's main effect is 28,603,247 kJ, and the simulation result indicates that the annual EUI will be decreased by 23% if the module, with the mentioned characteristics, is used for an office rather than a classroom.

Associated to the number of pane, the run1 and the run1c are compared with the run16 and the run16c. The annual EUI decreases up to 8% when the number of pane is appropriate and the other variables have the value of (-) while it increases by 5% when the number of pane is not appropriate and the other variables have the value of (+). In the same fashion, it is 4% increase vs. 2% decrease for the orientation, 42% decrease vs. 62% increase for the glazing percentage, 16% decrease vs. 21% increase for the shading, 1% increase vs. 8% decrease for the wall insulation, and 11% decrease vs. 43% increase for the occupancy respectively.

- Similar to the two other climates, as shown in the main effect of the variable's Qheat and Qcool (Table 6), the orientation's main effect, from the east facing module to the south facing module, shows that both module's Qheat and Qcool are (+); the east facing module's Qheat is more than south facing module whereas the east facing module's Qcool is less than the south facing module. Considering the glazing percentage's main effect, the module's Qheat and Qcool from 3/3 to 1/3 of the façade are (+) and (-) respectively; both the Qheat and Qcool for 3/3 of the façade as window are more than 1/3 of the façade. The number of pane's main effect, from the single to the double-pane window, shows that the Qheat and Qcool are (+) and (-) respectively; both the single-pane window's Qheat and Qcool are more than the double-pane window's. The shading's main effect from no overhang to the well-designed overhang demonstrates that both the Qheat and Qcool are (-); as well, the no overhang's Qheat is less than the well-designed overhang's, and the no overhang's Qcool is more. Taking the wall insulation's main effect from the R-value of 5 to the R-value of 20, both the Qheat and Qcool are (+); the R-value of 5's Qheat is more than the R-value of 20's whereas the R-value of 5's Qcool is less. Finally, the occupancy's main effect, from the function of classroom to office, shows that both the Qheat and Qcool are (-); the classroom's Qheat is less than the office's whereas the classroom's Qcool is more. More information about the amount of a variables' effect in the best and the worst conditions, in terms of considering the other proper variables, is demonstrated in the appendix as well.
- The sixteen runs' results in this climate prove that the difference between the best design (run15) and the worst (run1) is 137,131,761 kJ per year. Hence, the amount of the module's saving could be up to \$ 4572 per year depending on the six variables' correct design (86,935,672 kJ / 3600) x \$ 0.12 = \$ 4572. The saving amount in

Run	1(Orientation)	2(Glazing %)	3(No. of Pane)	4(Shading)	5-Wall Insulation	6-Occupancy	Q-heat	Q-cool	Q-heat+Q-cool	Annual EUI	Percentage
run1	(+)	(+)	(+)	(+)	(+)	(+)	40,955.81	12,600	53,555.81	164,697.797	
run2	(+)	(+)	(+)	(+)	(+)	(-)	42,232.22	12,600	54,832.22	169,264.49	
run3	(+)	(+)	(+)	(+)	(-)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run4	(+)	(+)	(+)	(+)	(-)	(-)	42,837.54	12,600	55,437.54	172,272.72	
run5	(+)	(+)	(-)	(+)	(+)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run6	(+)	(+)	(-)	(+)	(+)	(-)	41,837.54	12,600	54,437.54	167,244.99	
run7	(+)	(+)	(-)	(+)	(-)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run8	(+)	(+)	(-)	(+)	(-)	(-)	42,837.54	12,600	55,437.54	172,272.72	
run9	(+)	(-)	(+)	(+)	(+)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run10	(+)	(-)	(+)	(+)	(+)	(-)	41,837.54	12,600	54,437.54	167,244.99	
run11	(+)	(-)	(+)	(+)	(-)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run12	(+)	(-)	(+)	(+)	(-)	(-)	42,837.54	12,600	55,437.54	172,272.72	
run13	(+)	(-)	(-)	(+)	(+)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run14	(+)	(-)	(-)	(+)	(+)	(-)	41,837.54	12,600	54,437.54	167,244.99	
run15	(+)	(-)	(-)	(+)	(-)	(+)	39,733.60	12,600	52,333.60	161,117.76	
run16	(+)	(-)	(-)	(+)	(-)	(-)	42,837.54	12,600	55,437.54	172,272.72	

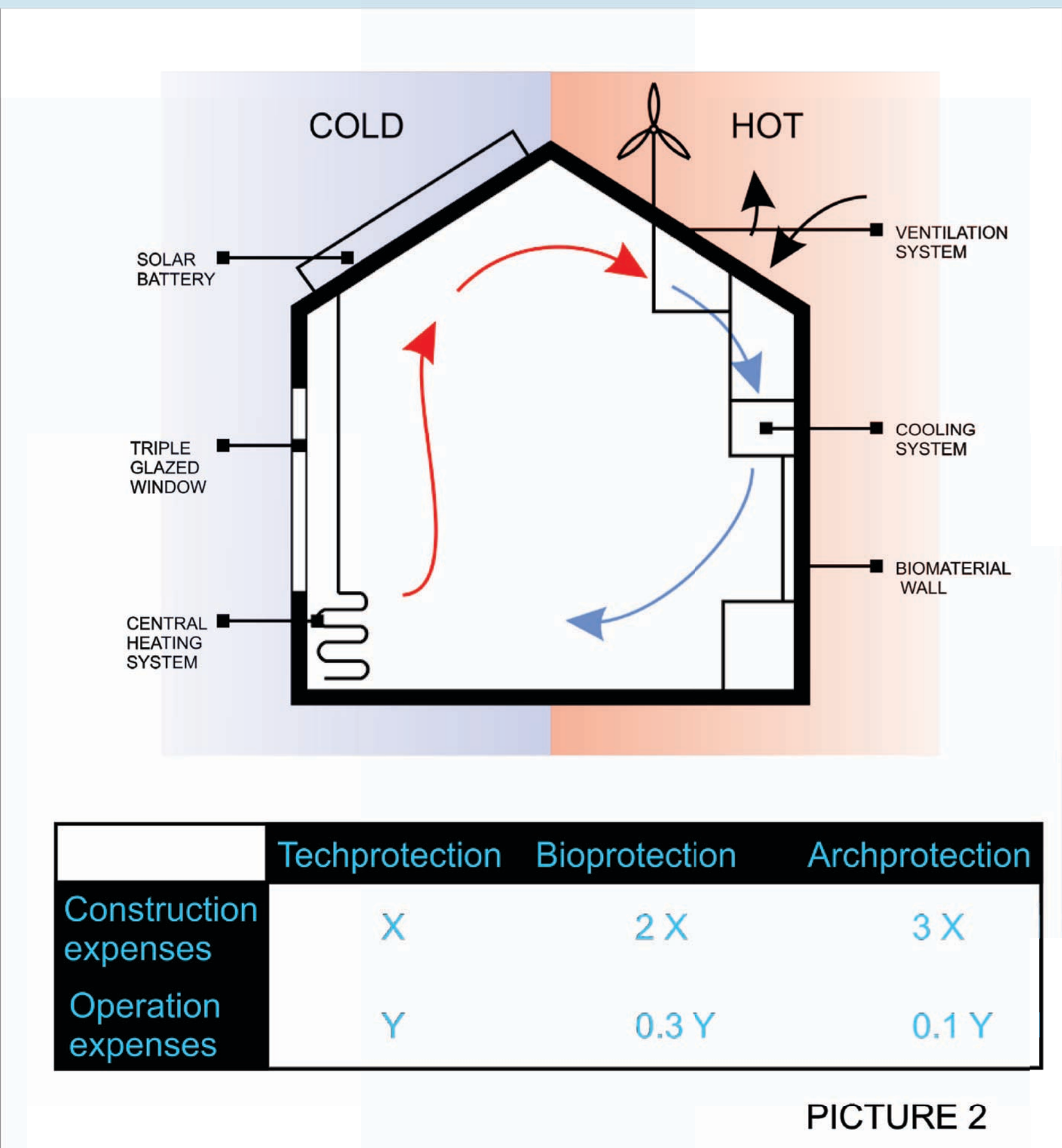
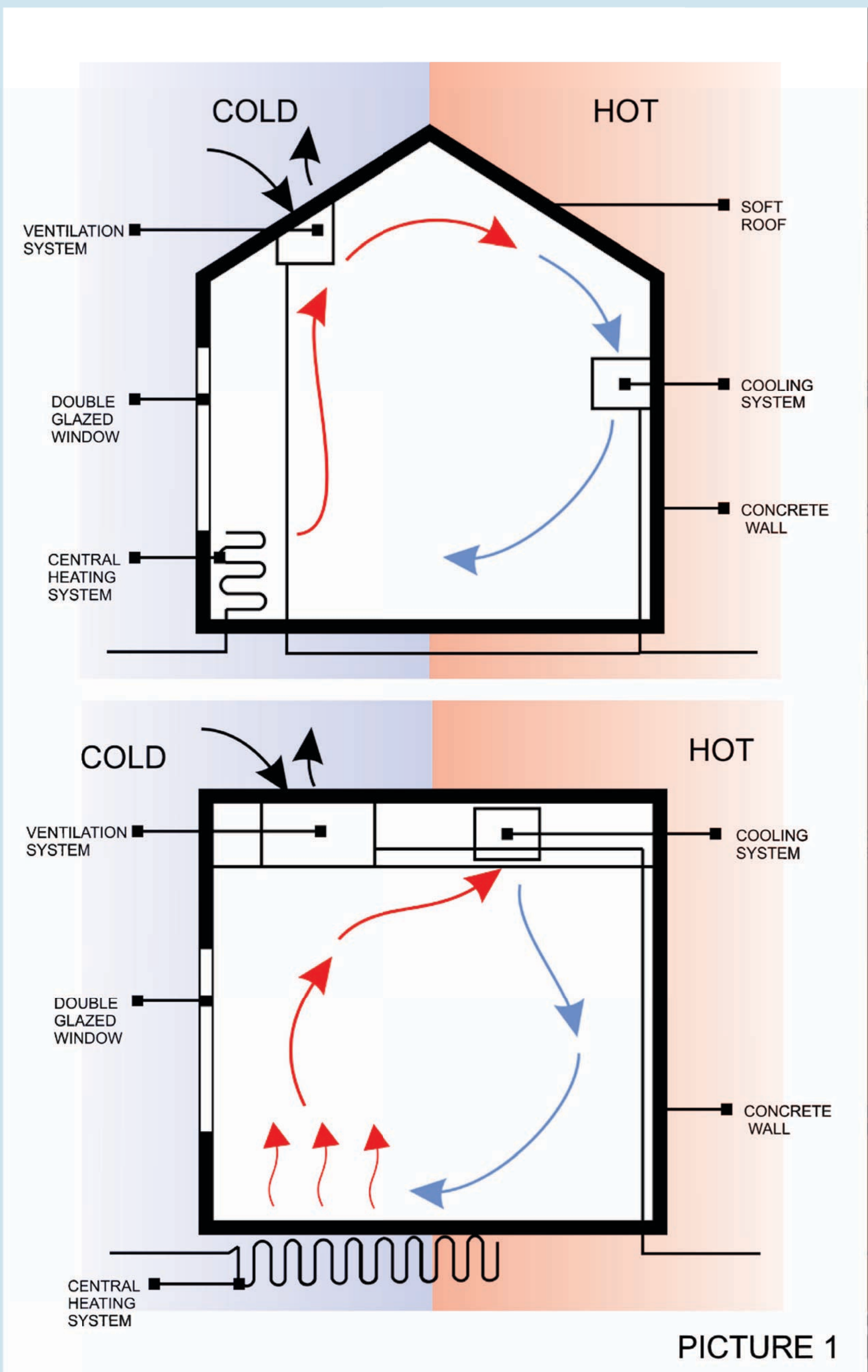
Table 4: Simulation results for Minneapolis

Run	1(Orientation)	2(Glazing %)	3(No. of Pane)	4(Shading)	5-Wall Insulation	6-Occupancy	Q-heat	Q-cool	Q-heat+Q-cool	Annual EUI	Percentage
run1	(+)	(+)	(+)	(+)	(+)	(+)	29,445.34	16,777.22	46,222.56	146,222.56	
run2	(+)	(+)	(+)	(+)	(+)	(-)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run3	(+)	(+)	(+)	(+)	(-)	(+)	31,733.13	16,777.22	48,510.35	148,510.35	26
run4	(+)	(+)	(+)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run5	(+)	(+)	(-)	(+)	(+)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run6	(+)	(+)	(-)	(+)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run7	(+)	(+)	(-)	(+)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run8	(+)	(+)	(-)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run9	(+)	(-)	(+)	(+)	(+)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run10	(+)	(-)	(+)	(+)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run11	(+)	(-)	(+)	(+)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run12	(+)	(-)	(+)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run13	(+)	(-)	(-)	(+)	(+)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run14	(+)	(-)	(-)	(+)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run15	(+)	(-)	(-)	(+)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run16	(+)	(-)	(-)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run17	(-)	(+)	(+)	(+)	(+)	(+)	29,445.34	16,777.22	46,222.56	146,222.56	
run18	(-)	(+)	(+)	(+)	(+)	(-)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run19	(-)	(+)	(+)	(+)	(-)	(+)	31,733.13	16,777.22	48,510.35	148,510.35	26
run20	(-)	(+)	(+)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run21	(-)	(-)	(+)	(+)	(+)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run22	(-)	(-)	(+)	(+)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run23	(-)	(-)	(+)	(+)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run24	(-)	(-)	(+)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run25	(-)	(-)	(-)	(+)	(+)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run26	(-)	(-)	(-)	(+)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run27	(-)	(-)	(-)	(+)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run28	(-)	(-)	(-)	(+)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run29	(-)	(-)	(-)	(-)	(+)	(+)	29,445.34	16,777.22	46,222.56	146,222.56	
run30	(-)	(-)	(-)	(-)	(+)	(-)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run31	(-)	(-)	(-)	(-)	(+)	(+)	31,733.13	16,777.22	48,510.35	148,510.35	26
run32	(-)	(-)	(-)	(-)	(+)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run33	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run34	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run35	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run36	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run37	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run38	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run39	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run40	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run41	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run42	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run43	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run44	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run45	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run46	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run47	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run48	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run49	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run50	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run51	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run52	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run53	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run54	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run55	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run56	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run57	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run58	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run59	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run60	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run61	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run62	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run63	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run64	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run65	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run66	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run67	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run68	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run69	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run70	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run71	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run72	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run73	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run74	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run75	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run76	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run77	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run78	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run79	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run80	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run81	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run82	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run83	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run84	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run85	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run86	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run87	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run88	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run89	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run90	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run91	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run92	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run93	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run94	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run95	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run96	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run97	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run98	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run99	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run100	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run101	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run102	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run103	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run104	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run105	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run106	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run107	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run108	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run109	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26
run110	(-)	(-)	(-)	(-)	(-)	(-)	29,445.34	16,777.22	46,222.56	146,222.56	
run111	(-)	(-)	(-)	(-)	(-)	(+)	27,739.14	16,777.22	44,516.36	140,516.36	-26



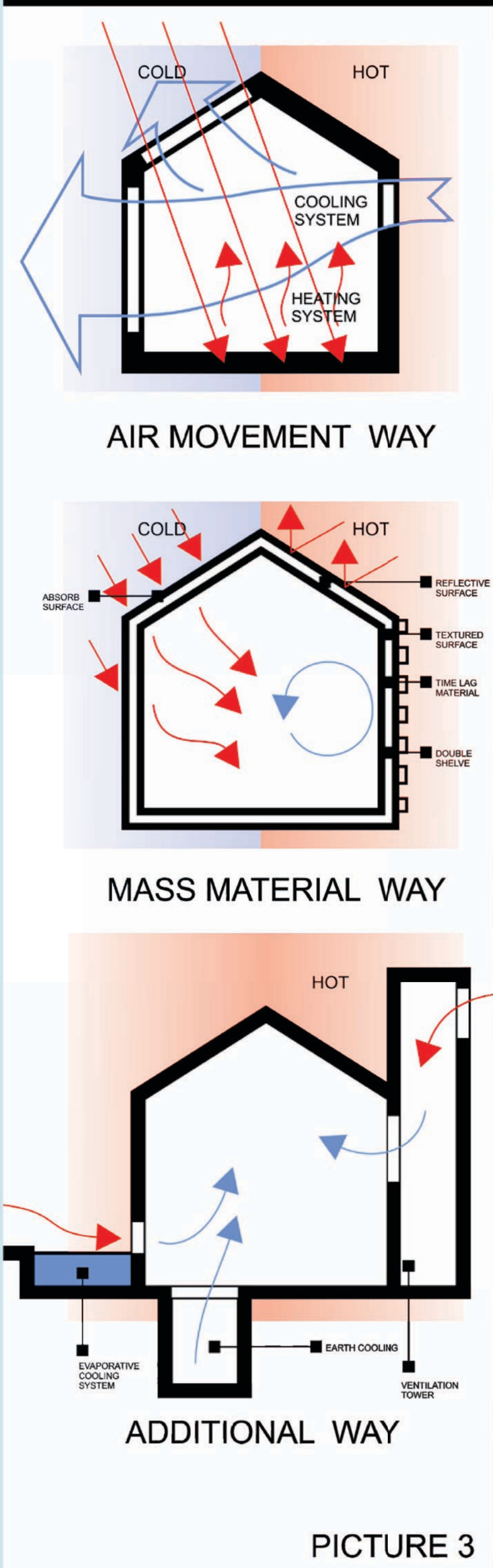
Tema 5
Infrastructure Networks and Landscape

Nataliya Tinyaeva
Astrakhan Engineer Building Institute, Russia



NATALIYA TINYAEVA

THREE STEPS PROTECTION FROM
ENVIRONMENTAL INFLUENCES



During all period of mankind development human tried to create an adaptation envelope that will be as mediator between environment and himself to create comfortable living conditions. Till 20th century it was nature itself just modified into walls, roof etc. With the beginning of industrial revolution and big building process it was replaced with technical devices. In conditions of growing population of the world it requires more and more energy and other natural resources. It creates dangerous process on the planet. Nowadays scientific researches represent new types of cooling, heating and conditioning, using renewable power sources. But I propose to use architecture as a mediator in human-environment relations as before but with modern understanding of the house and its place in the city.

So we can mark out three main steps:

1 STEP – Techprotection – is a system of technical devices such as ventilators, condition systems, heating appliances and so on. These instruments create artificial conditions for human living. Such system existed since the beginning of the 20th century till 70tieth (p.1).

2 STEP – Bioprotection – is a conception of complicated system of solar energy heating and electricity, or wind sources devices. It appeared in the end of the 20th century because of ecological problems on the planet (p.2).

3 STEP – Archprotection – is a conception based on the heritage achievements but with modern innovations (constructions, materials). It means that all required comfort condition could be achieved by thoughtful architectural decisions. Part of it can be selected from historic experience. Another part should be produced and checked by computer system (p.3). Nowadays climate changes showed that constant house structure can't provide convenient conditions for human in changing world. So let the house change to save constant comfort conditions for people.

So city and the house will be like an organism that adapts to environment conditions. In sought regions for example house will be overgrown with different sun shading and heat insulation devices. And the city will be overgrown with development or gardens according to climate, social or other condition.



Tema 6

Infrastructure Networks and Landscape



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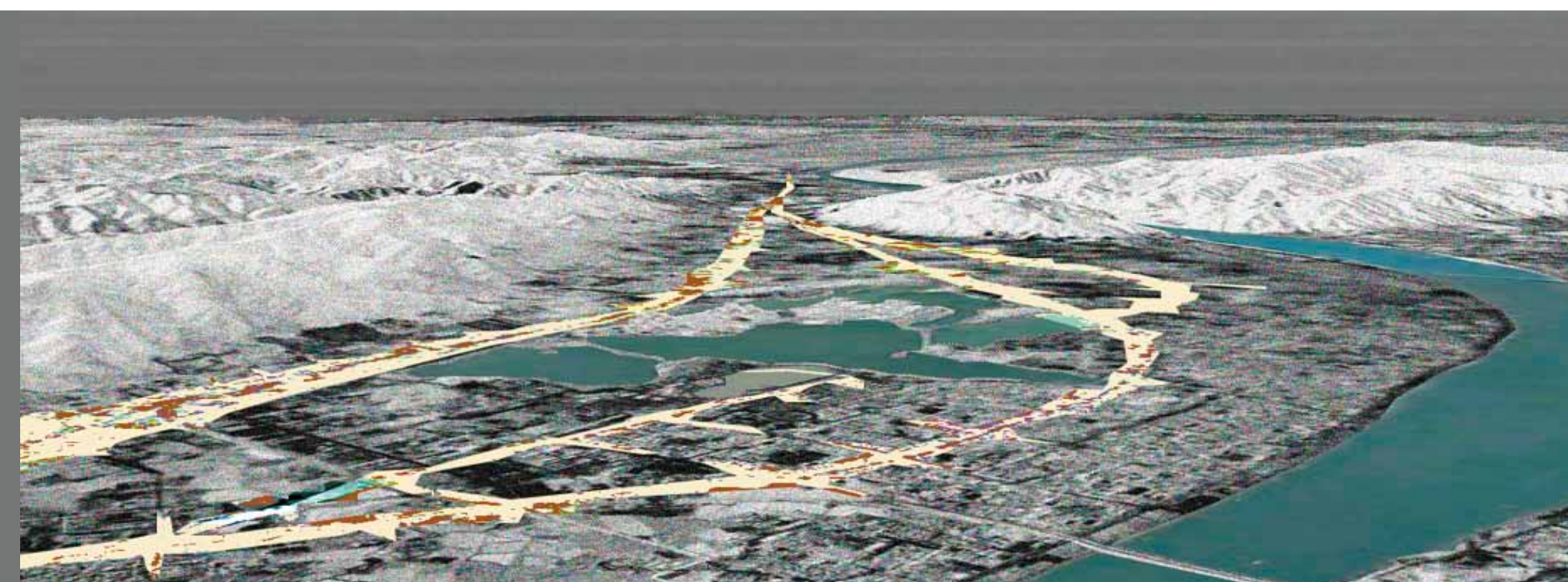


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Cities in Transformation. Research & Design.
Ideas, Methods, Techniques, Tools, Case Studies
Infrastructure Networks and Landscape
EAAE/ARC Conference Milano 7-10 June 2012

Gustavo Ambrosini, Guido Callegari
Politecnico di Torino, 1st Faculty of Architecture



Reshaping Mobility Infrastructure System in Zhaoqing, Guangdong, China

Infrastructure design should be considered as an up-to-date issue, forcing to re-think urban design practice as a meeting point for different disciplines referring to engineering, architectural and landscape field. The difficulty to control their impact on the territory shows the need to look at large scale transformations as landscape project, shifting design attitude from single objects to settlement forms, in order to generate meaningful and sustainable urban patterns.

We introduce a research-teaching work that experienced this awareness in relationship to urban developing dynamics of one of the fast growing areas of China, the Guangdong province. Starting from a general co-operation scenario among Italian universities and Guangdong province, the activity has been carried out in the research framework settled among four faculties of architecture (Turin, Cagliari, Genoa, Florence) and the administration of Zhaoqing city, to study strategies for enhancing living quality and sustainable development.

The activity focused on the development of city and transport: the aim has been to deal with infrastructure design from architectural and urban design point of view, pointing out the opportunities to renovate and improve urban areas starting from new mobility solutions.

Methodology: a Studio of Politecnico of Turin, 1st Faculty of Architecture. "Infrastructures and environment" (proff. G. Ambrosini, G. Callegari, L. Cantarella, G. Cosmacini) worked in 2009 in accordance with Zhaoqing town planning bureaux to re-design existing infrastructures in the city; improving new development possibilities and, in the meantime, enhancing landscape condition, were the main objectives. Four disciplines were involved – Architectural and urban design, Technology of architecture, Landscape architecture, Multimedia – strongly integrated in design process from zenith to street level point of view and back, from overall scale to detail and back.

The main problem investigated has been the improving of East-West connections, due to the increasing heavy traffic affecting central areas of the city, where the extraordinary Seven Star Crags Lake national park constitutes a natural barrier to be preserved. Two areas have been especially investigated:

1) North lakeside ribbon of infrastructures, thus reshaped as a parkway; 2) new East-West tunnel access areas. The result is not a taxonomy of archetypical solutions, but an open source of possible and useful design attitudes, suggesting patterns for settlement and public space typology.



Main outputs:

- carrying out of new design options able to improve the strategic objectives scheduled in planning documents, suggesting innovative options for mobility strategies to be undertaken.
- testing the ability of new settlement and landscape forms proposed to establish worthwhile relationship with existing landscape and urban patterns.
- developing a distance knowledge system: to afford an initially unknown and so far (physically and culturally) situation, it is something forcing us to open our mind by searching references in other cultures and stimulating synthesis abilities.
- using techniques and communication strategies able to express, in every design phase, a double tension between the street-landscape scale from one side, and the satellite view from the other, producing images able to explore and not only to describe.



Tema 6 Infrastructure Networks and Landscape

Beatrice Fracchia
Politecnico di Torino, Italy

Engineering knowledge and new railways in the second half of XIX century. Pietro Spurgazzi and his professional activity.

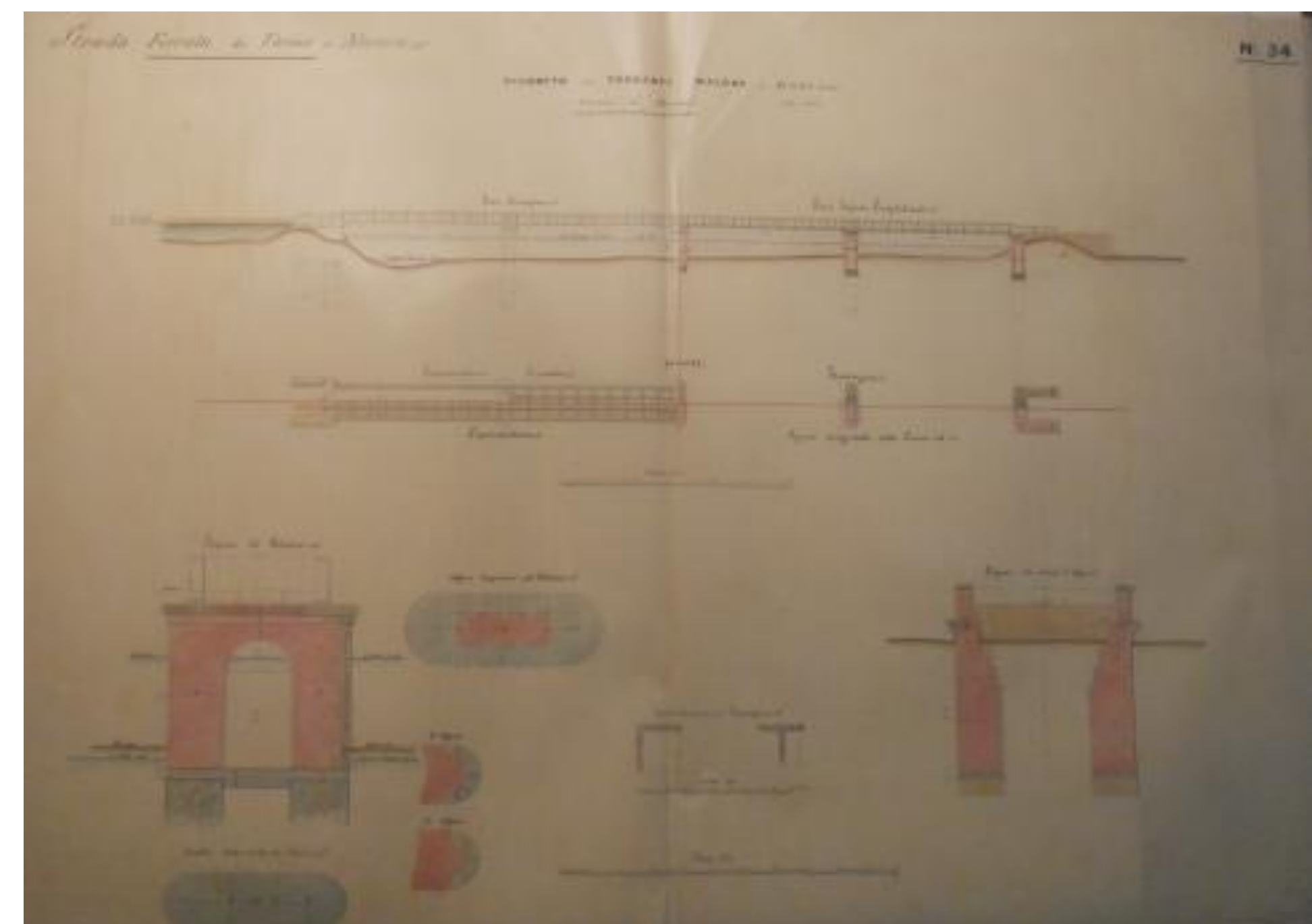
In the second half of nineteenth century, engineering knowledge about railway is considered the highest expression of scientific and technological developments. This theme is a subject of study for Pietro Spurgazzi (Turin 1815-1889), an engineer that in his long career is engaged as a member of Parliament, inspector of Civil Engineers in Council of Government, member of the Board of Public Work and, from 1864 to 1866, General Secretary of the Ministry of Public Works. Spurgazzi is indirectly involved in the initial actions of the plan for the Central Station in Milan, for the Venice Sea Station, for a railroad in the Marche Region, etc. He is actively involved in several technical committees.



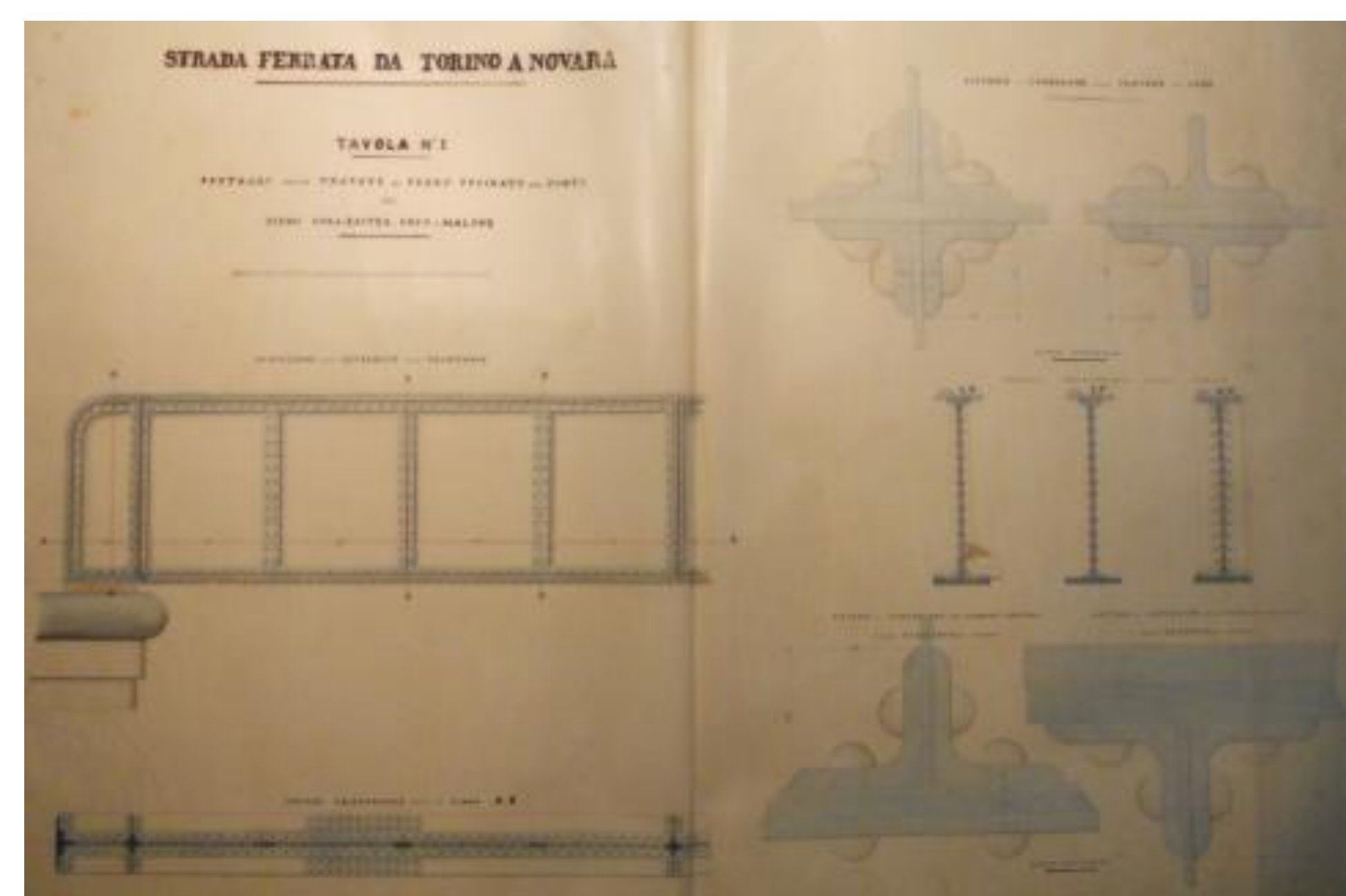
Stazione Marittima in Venezia. Archivio di Stato di Torino, Corte, *Carte Spurgazzi*, m. 10, s. 10.

The State Archive of Turin retains the fund Ministero dei Lavori Pubblici, in which are kept all the documentations about the railways. A fund, called *Carte Spurgazzi*, holds all the family documents, drawings, correspondences and publications of Spurgazzi. These numerous reports demonstrate the technical activities within the civil engineers and the cultural environment of the railway in Piedmont in the second half of the nineteenth century. It's a meaningful picture of the advanced technology and design achievements of the first railroads in Piedmont. Many papers in the archives and a large number of documents underline the involvement of the engineer in a local level, in the realization of many stretches of railway lines and stations in the land of Piedmont, and in a larger national level. Among the designs of Spurgazzi, many plans are preserved, for instance the original plan of the Central Station of Milan with its circular remittance disengaged from the rotating central platform; there are plans about Belgian stations of Bruges, Ostenda and Termonde. Spurgazzi is active in Turin in the works on the railway station of Turin-Novara. This matter, that involves the Municipality, the Chamber of Commerce, the Provincial Council of Health and the main professionals, wants to present the positive and critical aspects of each

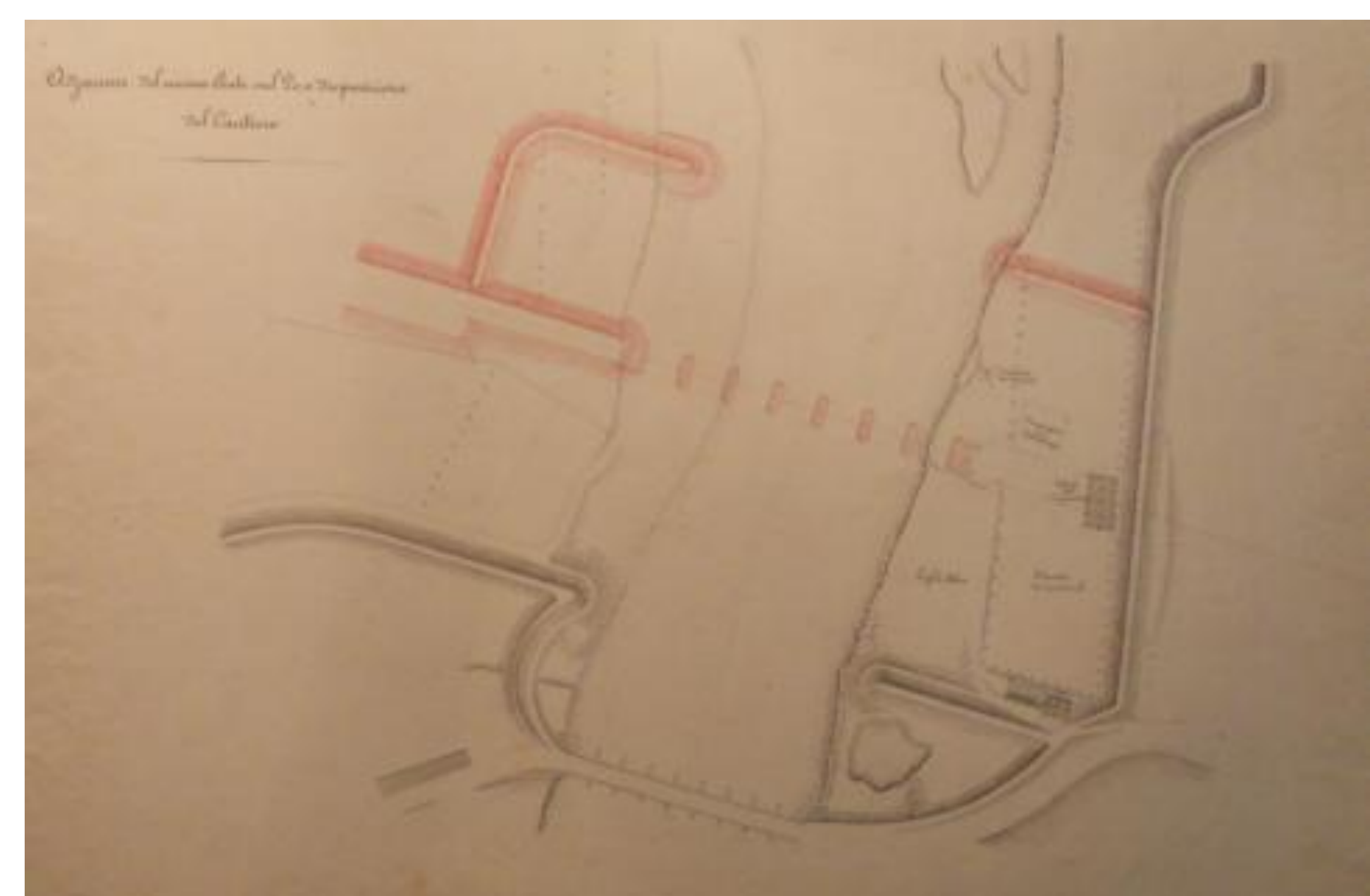
area that is analyzed. These examples of infrastructure design call lots of interdisciplinary practices, characterized by the research on the compatibility between networks and affected landscapes. The investigations concern the areas of Turin: Porta Susa, Valdocco, Vanchiglia and Aurora. There are lots of considerations about the future values of the lands next to the station, about evaluation of the distance from the exiting station of Porta Nuova and the healthiness of the location places. This is important to show a great attention and sensitivity by Spurgazzi on issues that are linked to the urban plan of the city and to the urban decorum as well.



Strada ferrata da Torino a Novara. Archivio di Stato di Torino, Corte, *Disegni Spurgazzi*, 9.



Strada ferrata da Torino a Novara. Archivio di Stato di Torino, Corte, *Disegni Spurgazzi*, 10-3.



Adiacenze del nuovo ponte sul Po e disposizione del cantiere. Archivio di Stato di Torino, Corte, *Disegni Spurgazzi*, 12-6.



Tema 6
Infrastructure Networks and Landscape

Alessandra Giannini
Politecnico di Milano, Italy





Tema 6 Infrastructure Networks and Landscape

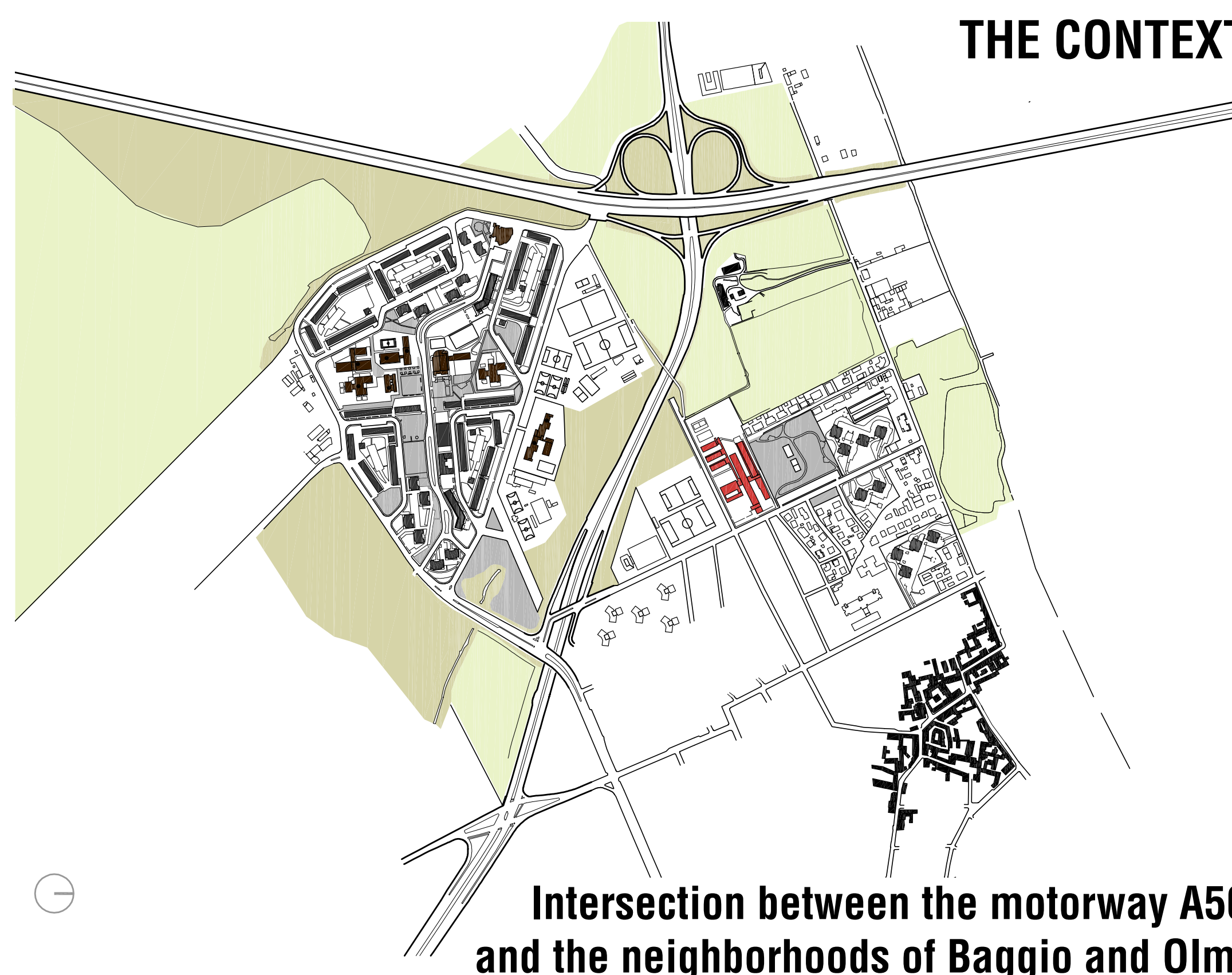
Andrea Oldani
Politecnico di Milano, Italy

INFRASTRUCTURE AND CROSSED LANDSCAPES PHOTOGRAPHY AS READING TOOL: SEQUENCES AND SECTIONS.

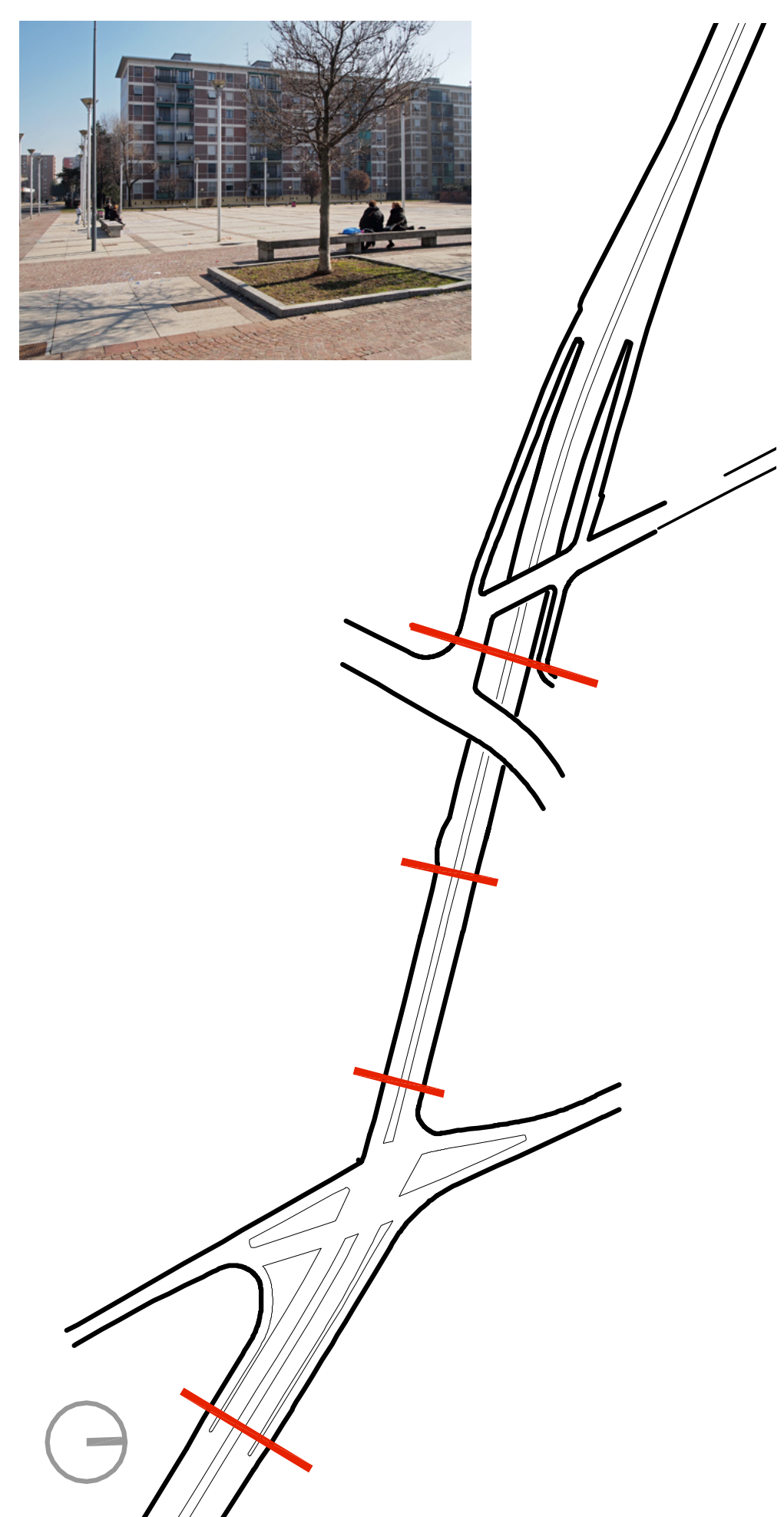
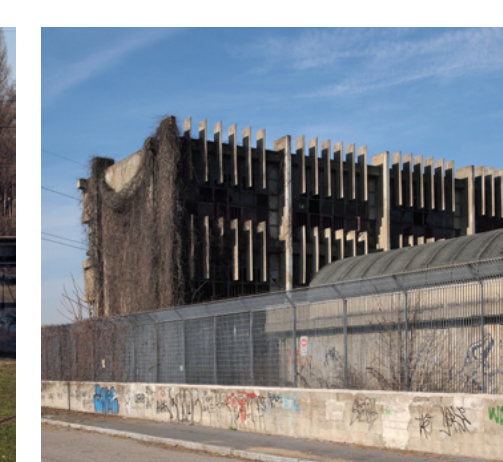
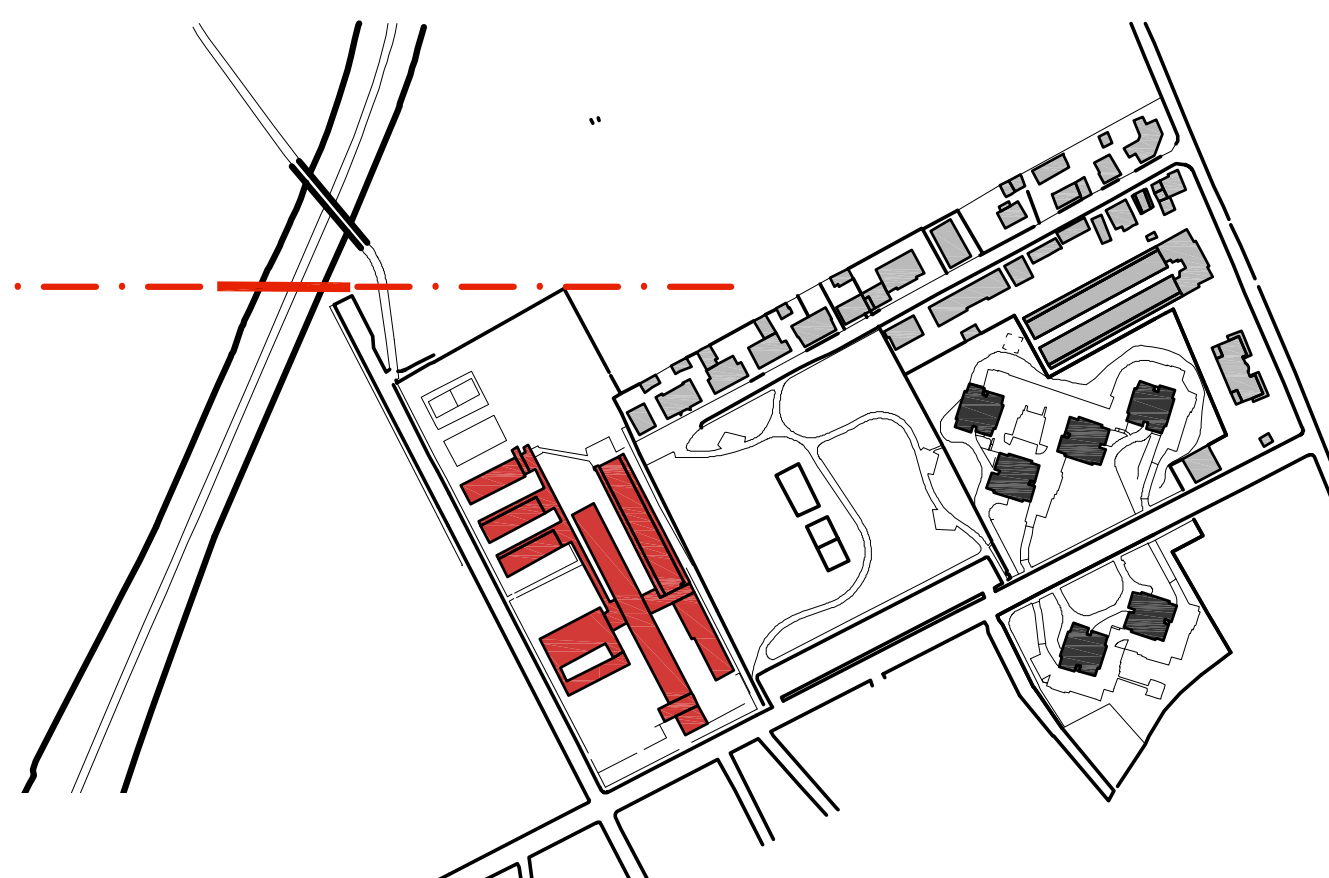
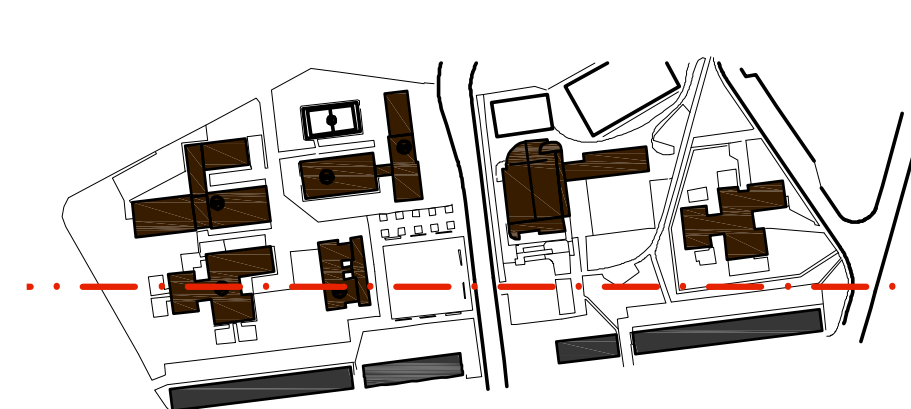
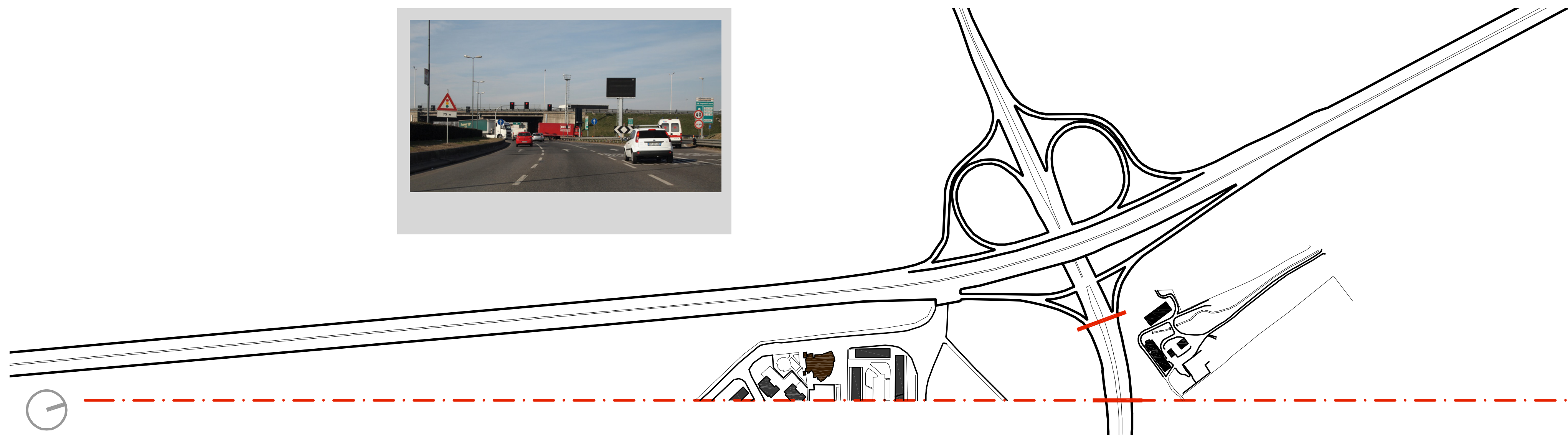
Never as in the design of infrastructures and of the spaces related to them the reading and description of the spaces consist in the first phase of the design process. If the representation of horizontal and vertical plane are well-established ways of analysis, the tool of photography is frequently employed as an independent contribution, uncoupled from the other readings.

The proposed contribution intends to explain some results of a research aimed to find new ways in order to use the photography as descriptive tool directly related, by sequences and sections, to the drawings operated on the topographic map. The hypothesis is to build photographic sequences based on the use of the territorial section as plan/guide to explain the relation between infrastructure and crossed landscapes.

THE CONTEXT



Intersection between the motorway A50
and the neighborhoods of Baggio and Olmi



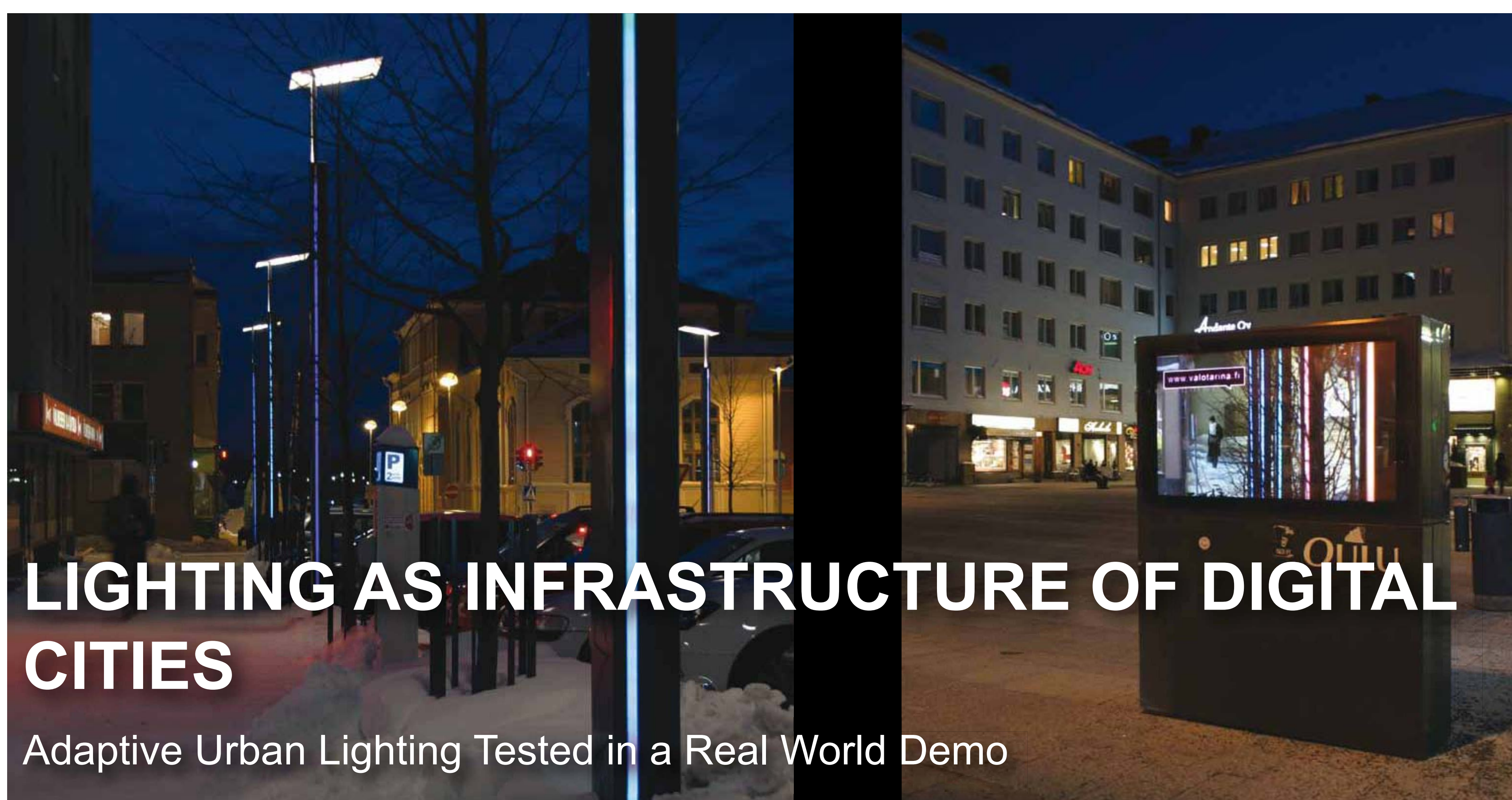
These sequences and sections allow to provide a possible interpretation of reality in which the succession of frames, properly assembled, is able to offer a “further view” of things. The reading of the constitutive elements of the landscape into the nodal sections and the construction of a narrative, through the combination and juxtaposition of the images, are in fact an anticipation of the project contents.

The sequences make possible to evaluate the relation between the landscape and the infrastructures that cross it (soil levels, materials, relational elements, views etc.). The sections allow to understand the more relevant components and character of the crossed landscape (built, relational and open spaces).

Andrea Oldani

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The content of this poster is part of the research PRIN 2008 - Architectural, urban, environmental transformation, regeneration and improvement of cross-border housing fabrics. Methods, tools, and projects applied to the assets of Milan western sector. (coord. prof. Ilaria Valente).



LIGHTING AS INFRASTRUCTURE OF DIGITAL CITIES

Adaptive Urban Lighting Tested in a Real World Demo

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Toni Österlund, Researcher, M.Sc. Arch.

Anna Luusua, Researcher, M.Sc. Arch.

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There is an ever increasing amount of digital computing being integrated into our everyday urban environment. This ubiquitous technology is influencing the character and elements of urban spaces on many levels, for example urban lighting. Lighting design for urban environments is gradually changing from static lighting towards dynamic and adaptive lighting. With the help of various sensors and transmitters, lighting can adapt to prevailing environmental conditions and react to different stimuli and signals, such as presence, movement, noise, trace data, SMS-messages and web-based data.

The case study – LightStories (Valotarina) – presented on this poster explores methods to enable city dwellers to participate in the design of public urban lighting. Lighting is approached as an experiential, interactive, social and communicative element of public urban spaces. The main concept of LightStories is to introduce public street lighting as a forum for personal narratives, messages and greetings. Through this playful idea of street lighting as social media, people are invited to participate in the lighting design of a public street. By using the LightStories web-based design tool (www.valotarina.fi/en), anyone can have the opportunity to devise one-hour-long dynamic lighting designs, thus having the power to decide what kind of an atmosphere the lighting creates in the street. Each participant books a suitable time for their story and creates a lighting design by choosing different colours and effects, and at which tempo they are displayed. The lighting

designs are accompanied by the users' stories, which are visible on the *LightStories* website and on the public *UBI* touchscreens in the city centre.

LightStories is a temporary lighting installation, but it uses the existing lighting infrastructure and ubiquitous technology built in the city of Oulu, Finland, the only European city shortlisted by the Intelligent Community Forum (ICF) in 2012. These consist of a lighting control device and existing RGB LED luminaires, ethernet and wireless networks and public touchscreens. Real-time video of the street is also displayed to illustrate the current story for the website users. The *LightStories* project was designed and constructed during the autumn and winter of 2011-2012, and it was launched in February 2012.

In the LightStories case study, the focus of interest is on the participatory design tool development, the urban inhabitants' sense of control and how the participation effects the experience of public urban place, evaluated through semi-structured interviews and a brief survey for all website users. The user-written narratives will also provide data for later analysis.

LightStories is part of the *Adaptive Urban Lighting – Algorithm Aided Lighting Design* (University of Oulu, 2011-2013) research project. The aim of the project is to research and develop algorithm aided design methods for designing adaptive urban lighting, accomplished through the design and realisation of real-world demos. In the project, adaptive lighting is approached as an experiential element of public urban spaces in northern conditions. The evaluation of the user experiences in this real world demo is carried out in collaboration with the multidisciplinary *UBI Metrics – Multidisciplinary Framework for Evaluating Ubicomp Systems in Real-World Urban Settings* research project (University of Oulu, 2011-2014).

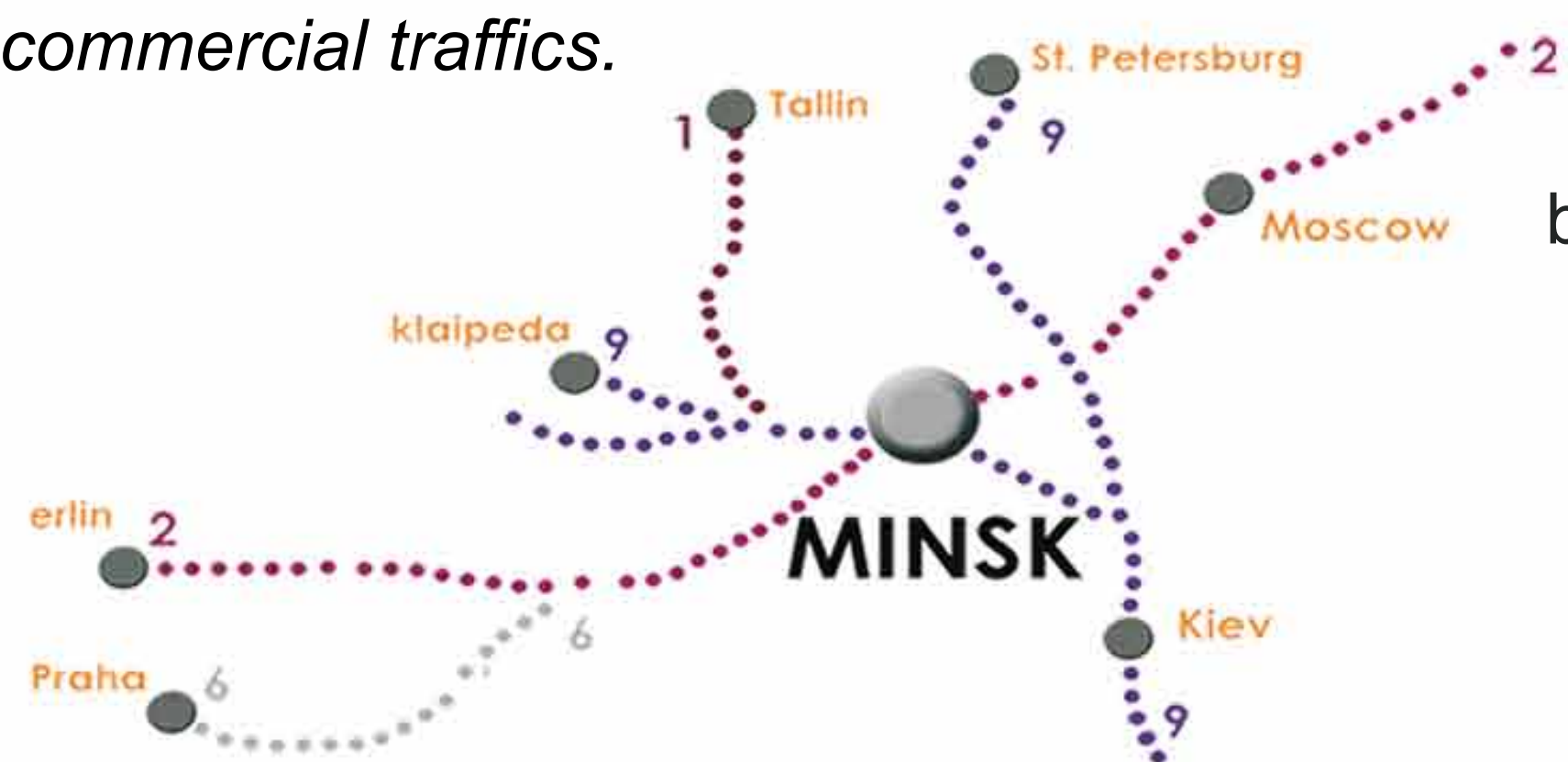
Keywords: adaptive urban lighting, interactive, participatory design, real world, public space



Tema 6 Infrastructure Networks and Landscape

Pisana Posocco
Università di Roma "La Sapienza", Italy

Thanks to its collocation at the crossroad of two important international corridors (2 e9) Minsk is to assume a central role in the East - West commercial traffics.

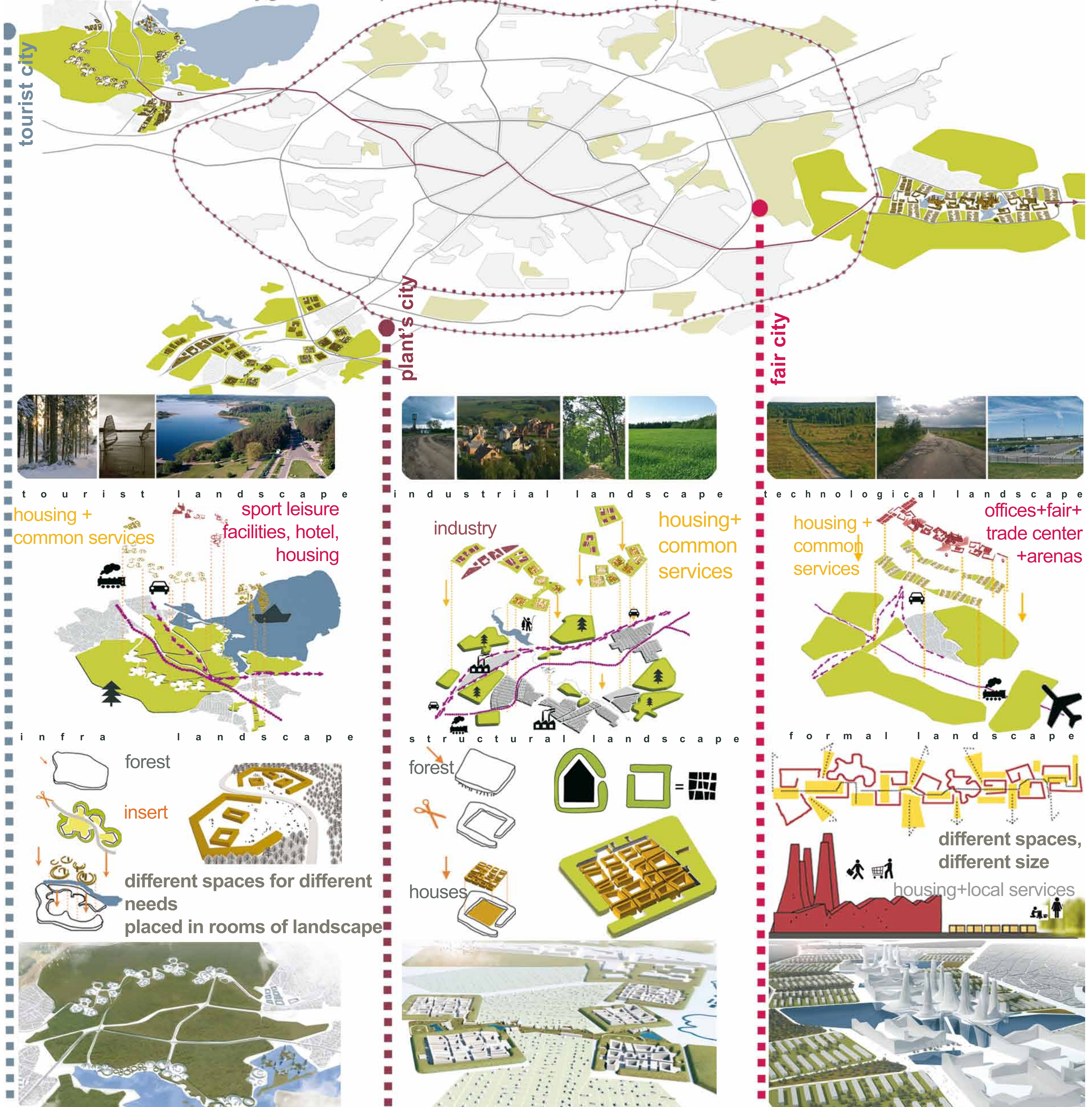


Minsk urban planning still stands on soviet criteria. In the last years a strong and convulse impulse to build is about to deface the city. A unique opportunity is given to fill a cultural gap and to put their gorgeous landscape at the basis of the urban renewal.

new house
\$\$\$ for private
new infrastructure
+ common service
||
quality of life

Megapolis Minsk Masterplan operates upon two operational criteria:
a) financing of major projects through public private partnership;
b) extensive and binding use of landscape as a guideline for interventions

New infrastructures stress the city grow. Landscape becomes infrastructure. Landscape is a guideline to be used at all the intervention scales



1 : 100 000



At the regional scale, landscape criteria determine the infrastructure design and the choice of places and suggest appropriate thematicism for settlements

1 : 5000



At the local scale, landscape criteria delineate the characteristics of settlements in relation to the environment



At the neighborhood scale, landscape criteria determine in detail design choices integrating projects to environment; at the small scale landscape approach suggests





Tema 7

Education in Architecture



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Tema 7 Education in Architecture

Francesca Di Gennaro
Politecnico di Milano, Italy

Cities in Transformation Research & Design

Ideas, Methods, Techniques, Tools, Case Studies
EAAE/ARCC Conference on Architectural Research

Milano 7-12 June 2012 - Politecnico di Milano

Francesca Di Gennaro

Density LAB

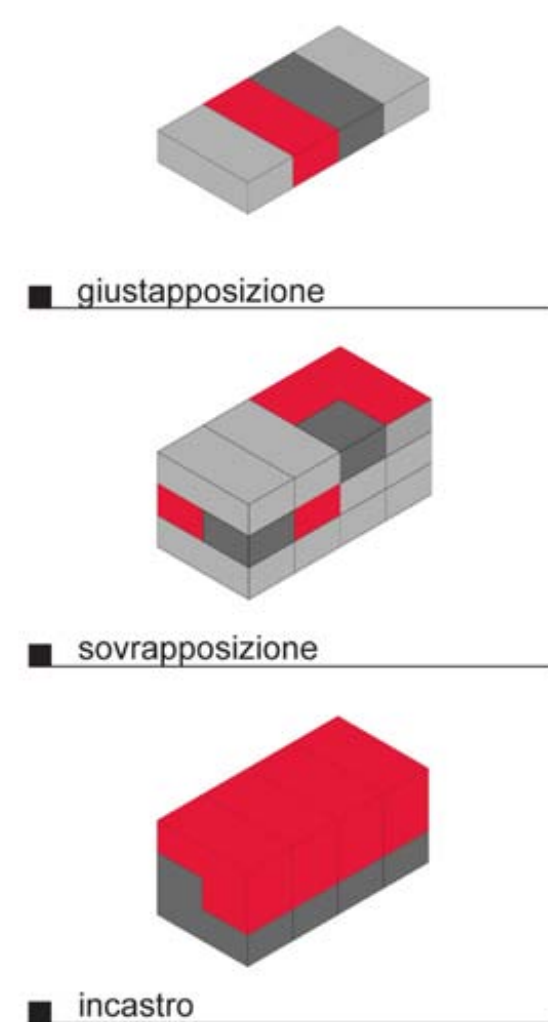
Low rise High density Housing

The educational experience of the laboratory design of the academic year 2010-2011, held at the School of Architecture at Politecnico of Milan was significant because it allowed us to experience a major design theme, linked to the city and contemporaneity.

Starting from the theme of Density, the students' work has focused on the search for residential systems that use the low house, in order to ensure improved quality of urban life.

The design theme deals with the issue of low-rise high-density housing, the proposal aims to test the hypothesis that different forms of housing are able on one hand to combine a high density, and on the other, the more domestic nature of the built sectors introducing in collective living some qualities typical of the single-family housing.

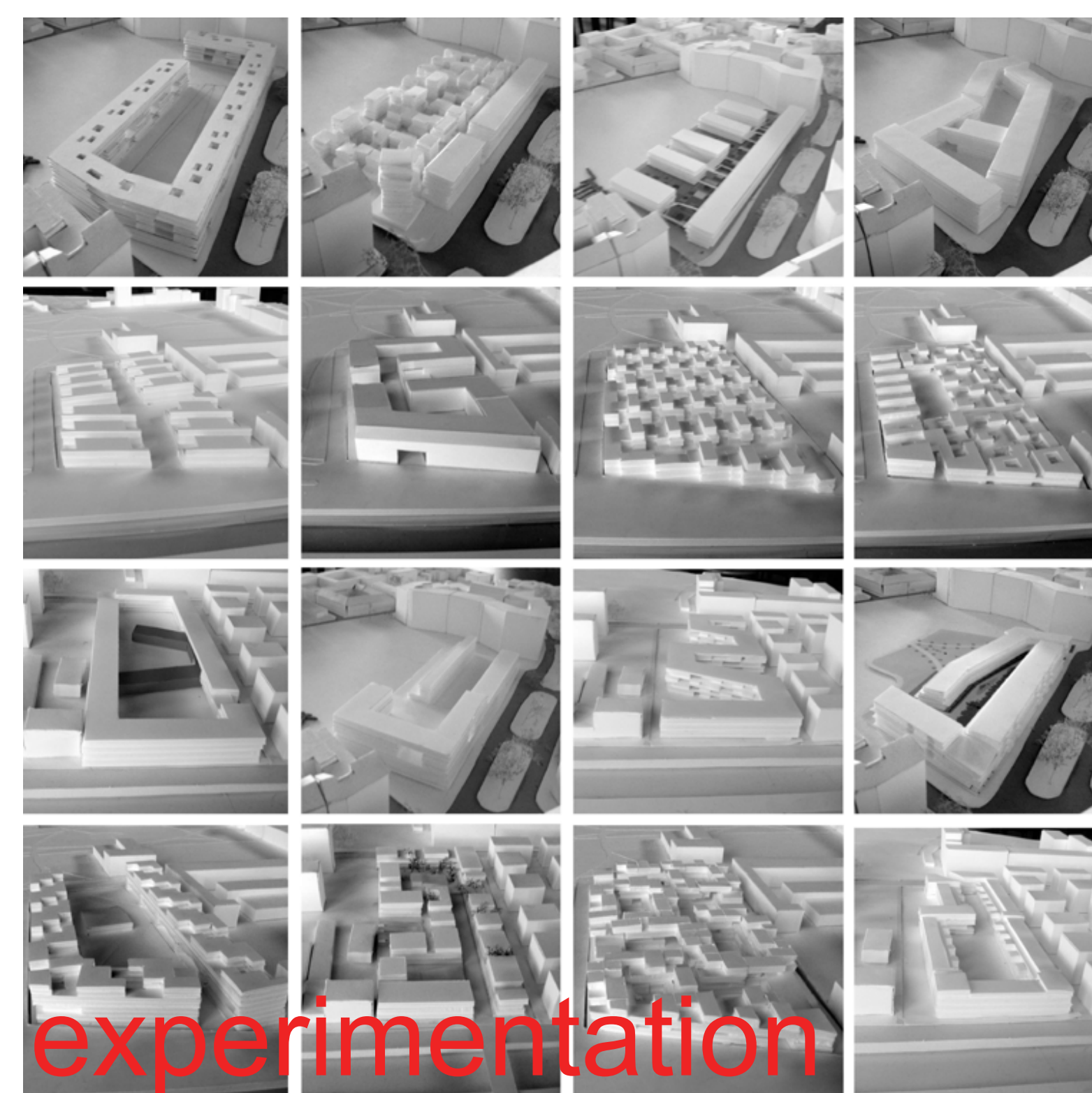
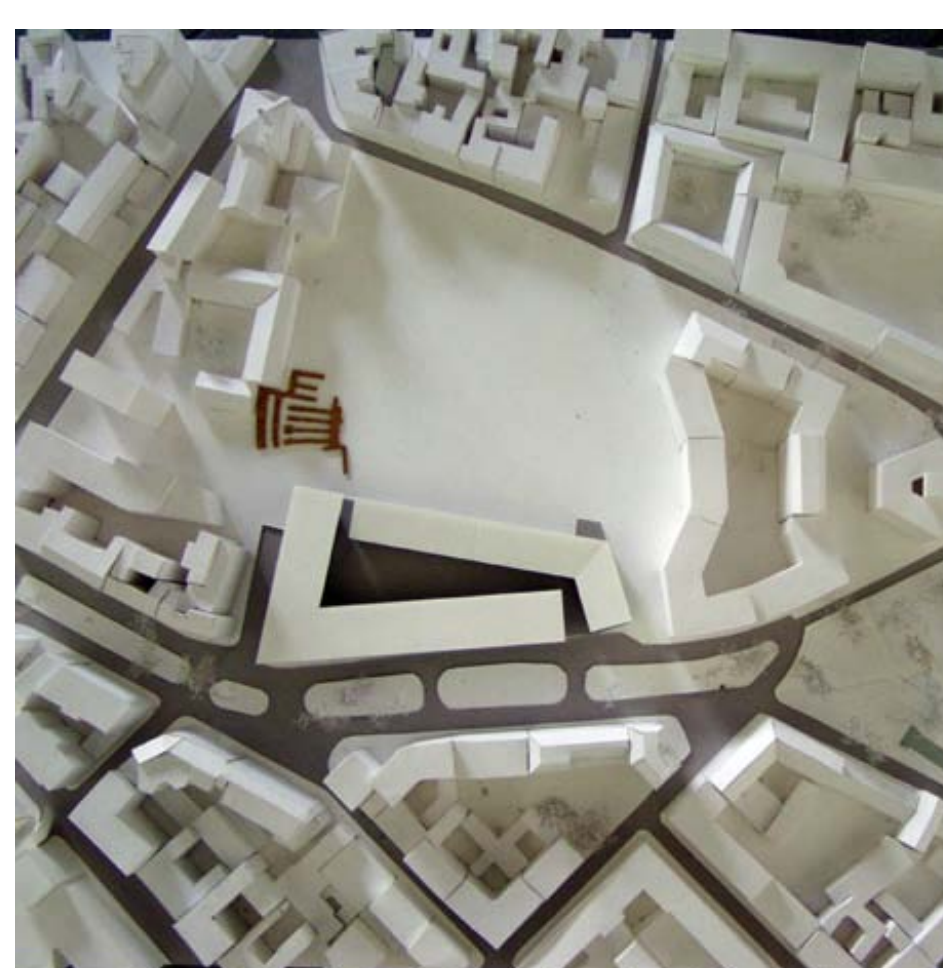
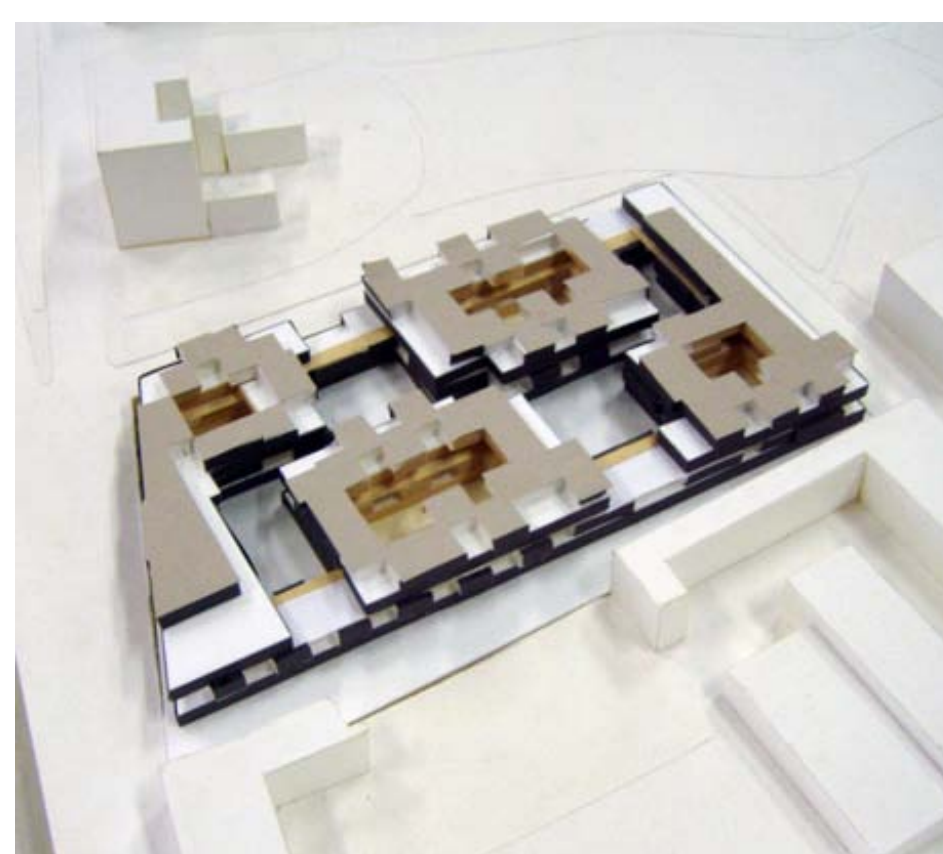
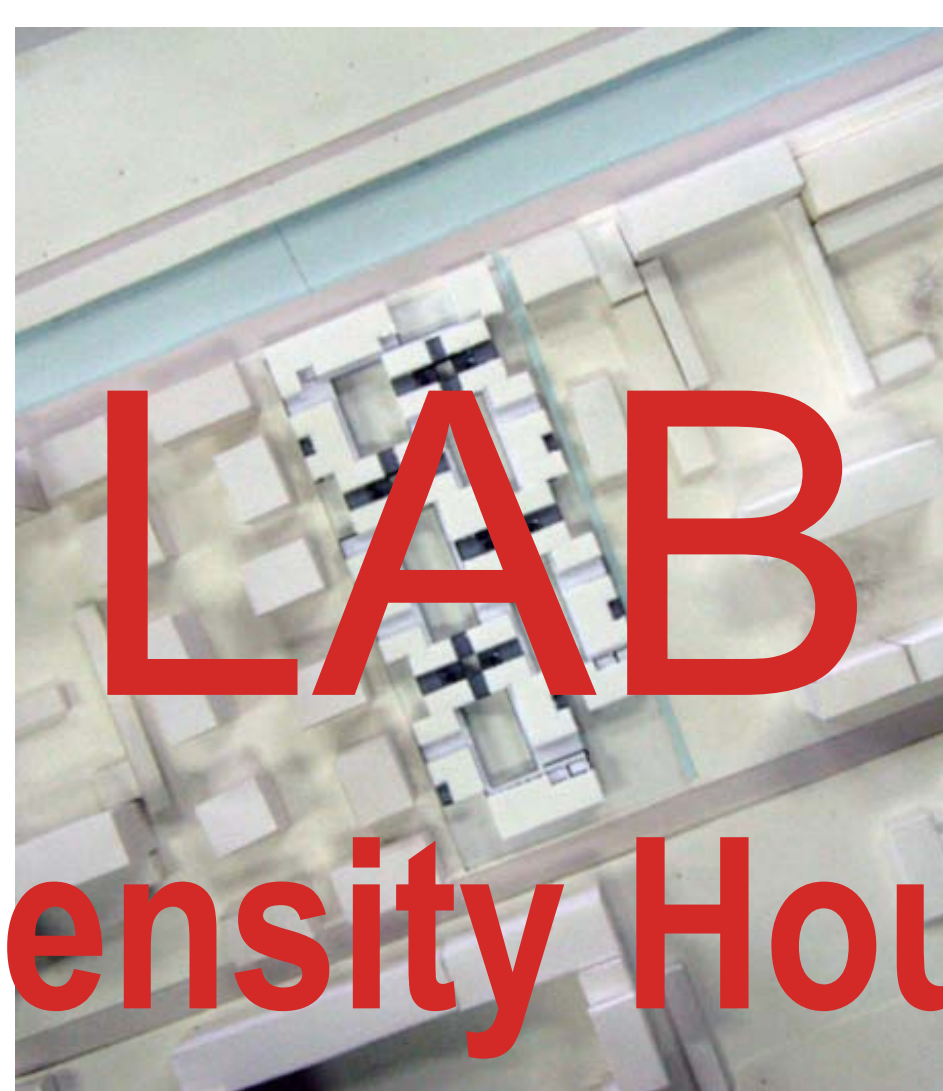
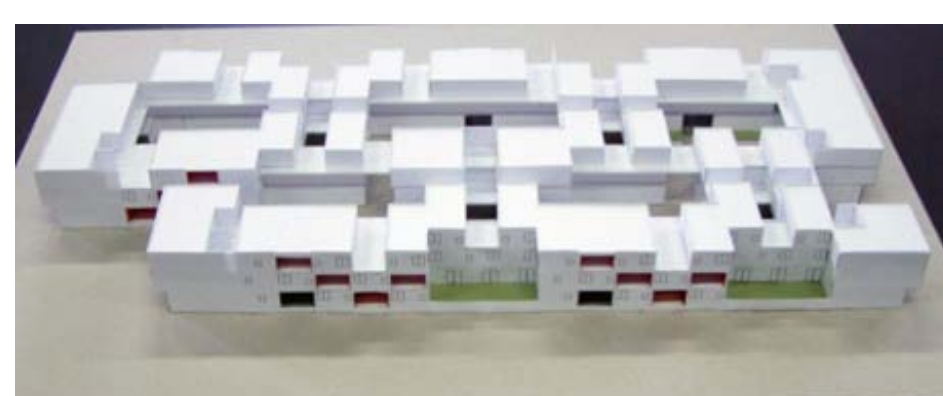
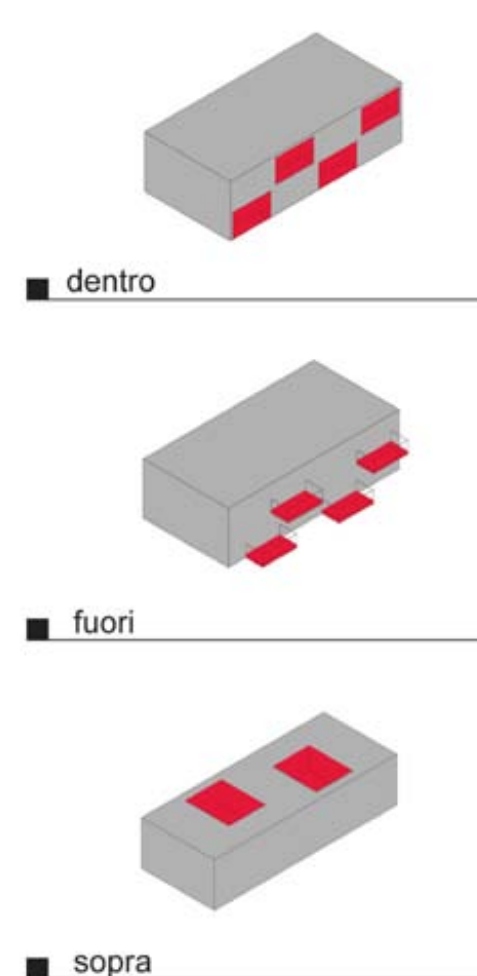
cell/aggregation



mediating spaces



inside/outside





LARCH b

ARCHITECTURELAB International Design Workshops

Territories in progress

The ARCHITECTURELAB international workshops are meetings of teachers and students from Polytechnic Schools and Architecture Faculties in which actual issues in town planning and architecture are debated in a context of intense and organized collaboration. The workshops are organized on a pre-defined general program, which is planned with local town Councils; the task is to stress the project ability of the international working groups and to elaborate “on-site” -even with different methodologies- new solutions and projects fitting a variety of urbanistic and environmental contexts. In this way, new ideas of the city and landscape together with fresh minds are fused in a multidisciplinary proactive vision. The development of an intensive program, as in a “brain storming” activity, brings each design teams to produce a shared synthesis, to achieve a final project which can be compared to the solutions of the other teams.

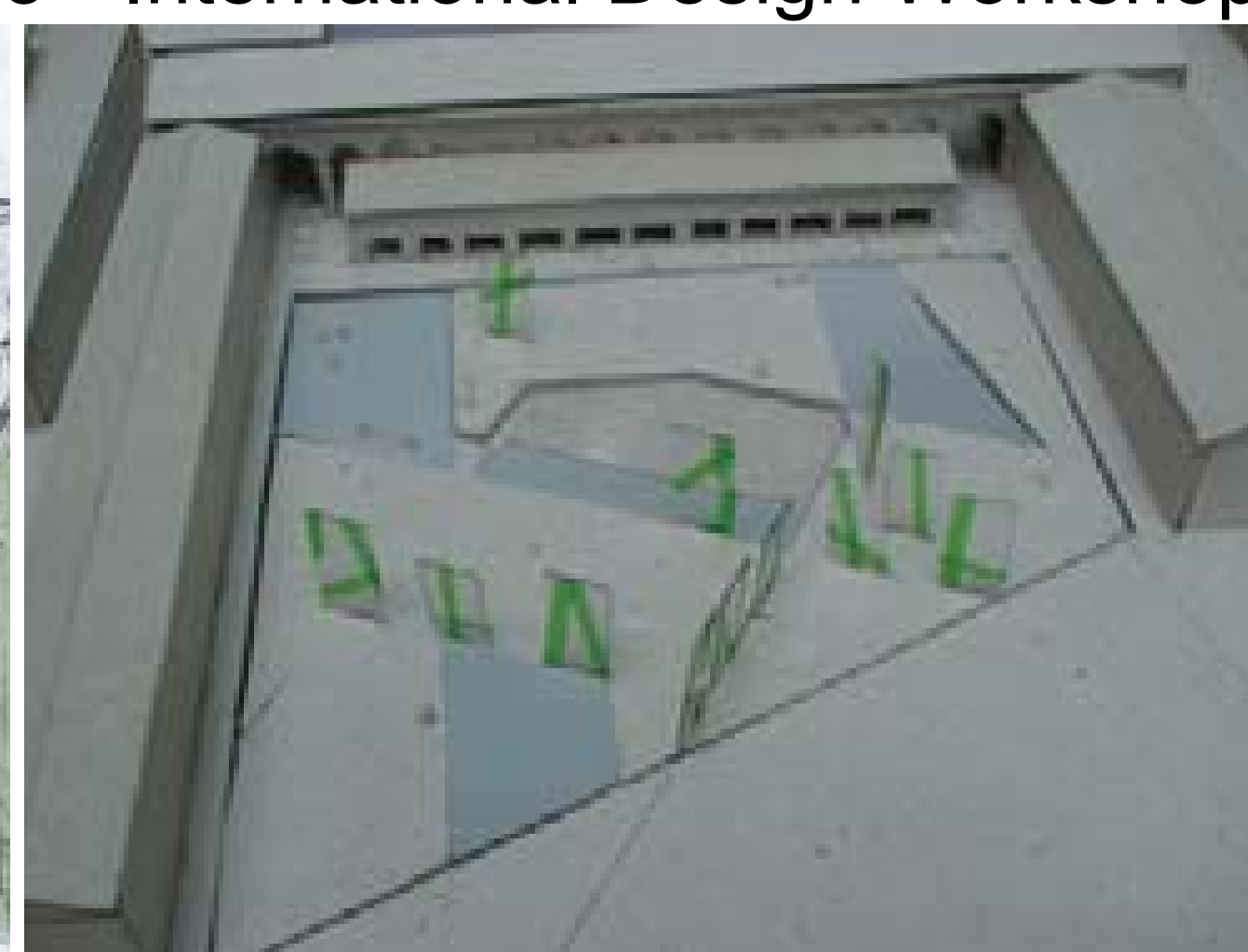
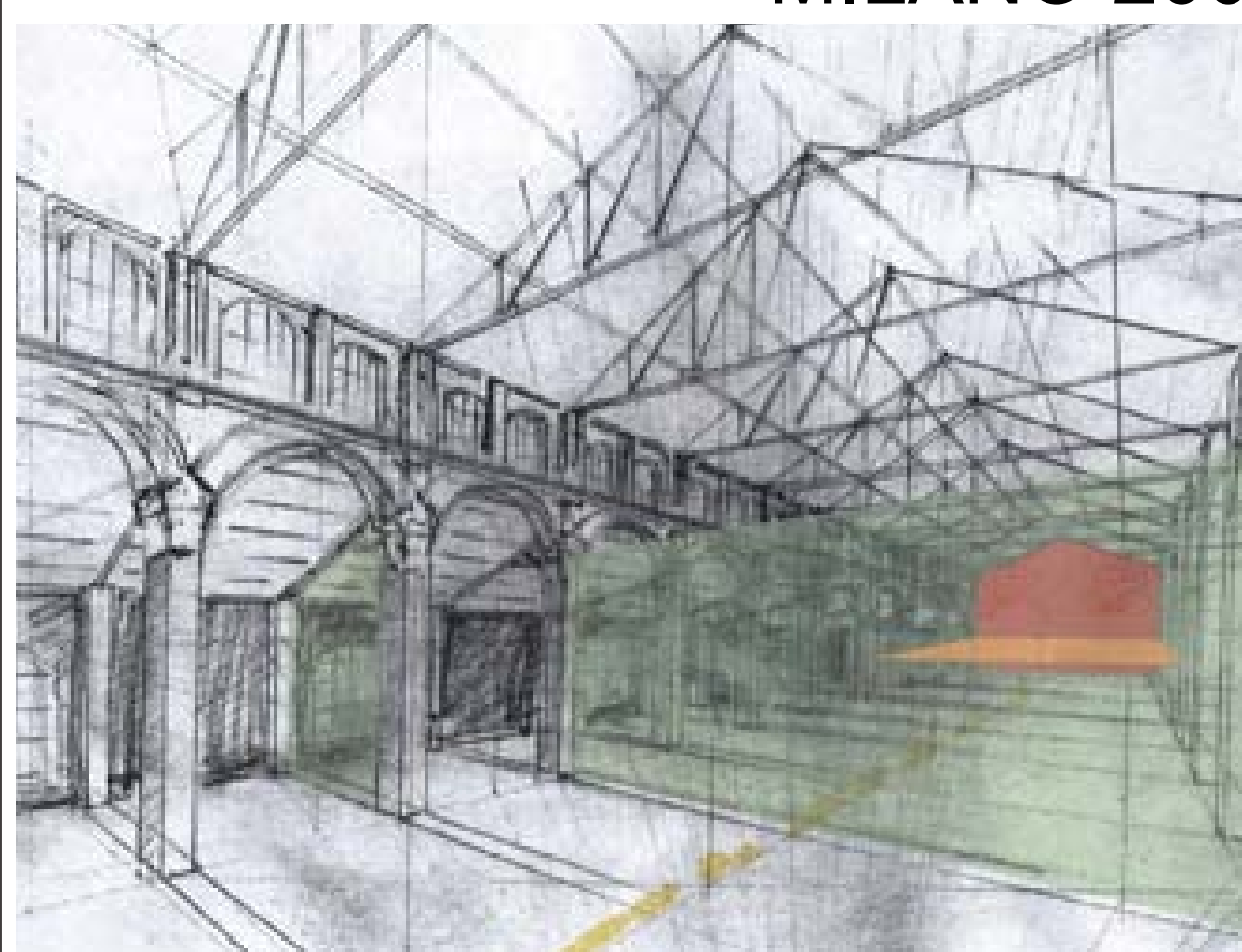
Moreover this experience is a clear and positive way to build up a civil sense of responsibility about the architect role in young generations and even in the communities in which we are guests. These projects indisputably demonstrate that “on-site” free application of method, passion and intelligence confirm that the “interior landscapes” living in our mind can take place and identity in the reality of cities and territories.

They reveal the values and opportunities offered by every project site, if we are able to look at it with new eyes and transparent attitude.

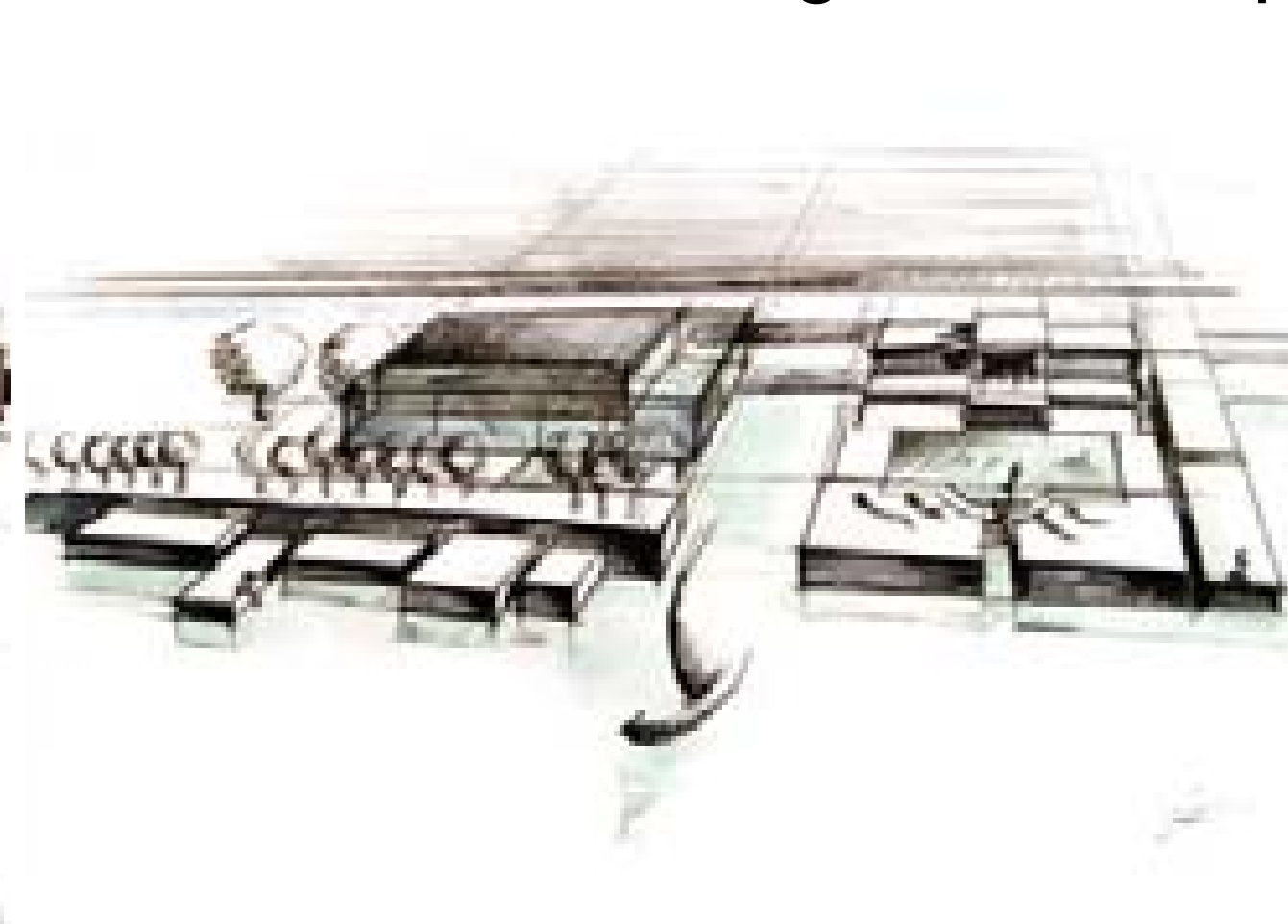
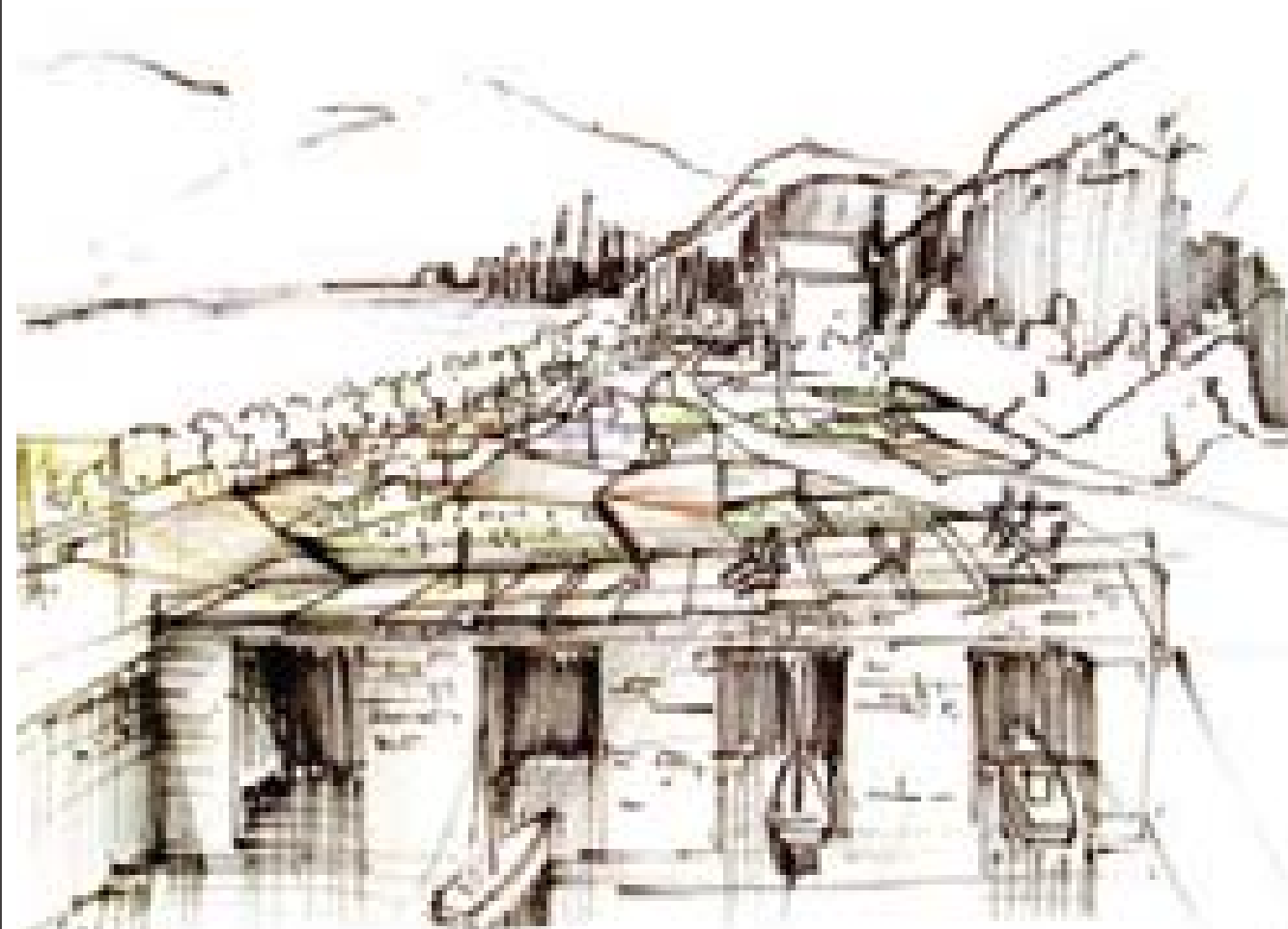
Ado Franchini
DIAP_Politecnico di Milano

www.architecturelab.eu
info@architecturelab.eu

MILANO 2003 - International Design Workshop



BELLAGIO 2005 - International Design Workshop



DOMODOSSOLA 2008 - International Design Workshop



CUSAGO 2009 - International Design Workshop



CANZO 2011 - International Design Workshop





Modern Education and the Humanist Approach to the City

Gonçalo Canto Moniz, Nelson Mota, Mário Krüger

Charter of Education: Modern Architectural Education Paradigm

Walter Gropius pedagogical experiences from Bauhaus to Harvard was fixed in his manifesto “Training the Architect” (1938), spread in CIAM congress and members:

“Man is to be the focus; his spiritual and material needs in relation to the life of the community”.

Modern school of architecture is characterized by modern methods (teamwork and experimentation) and a humanistic approach (the development of the student and the problems of the society/city).

Gropius humanist approach to architectural education resonates with Alberti's *De re aedificatoria* definition of the architect:

“who by sure and wonderful reason and method, knows both how to devise through his own mind and energy, and to realize by construction, whatever can be most beautifully fitted out for the noble needs of man, by the movements of weights and the joining and massing of bodies.”

Hence, Ernest Rogers claims that “Gropius was the Leon Battista Alberti of the 20th century” (Rogers, 1956).



Fig. 1 – C. Ramos and students (Porto, UIA, 1958)

Fig. 2 – CIAM Porto, CIAM 10, Dubrovnik (1956)

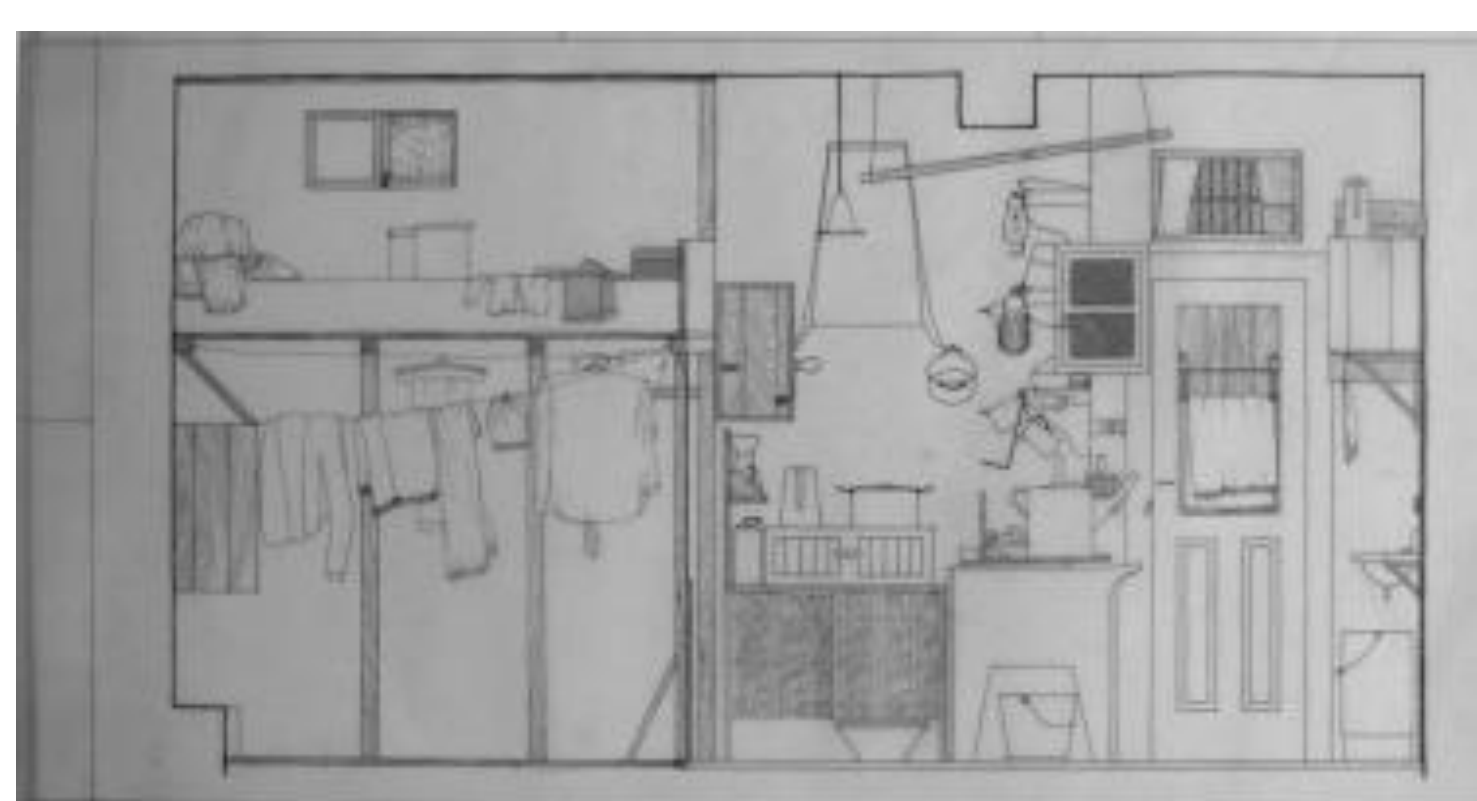
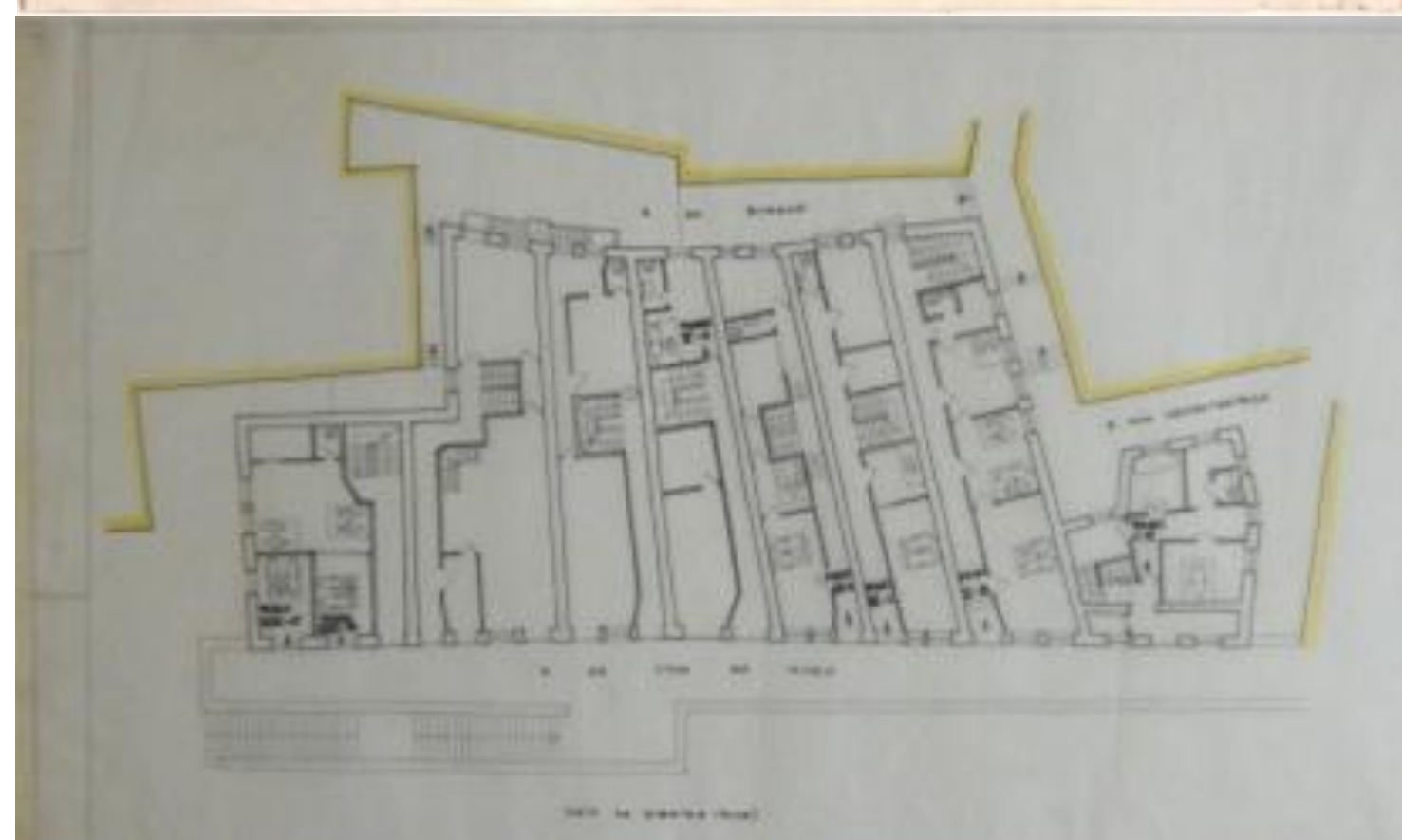


Fig. 3 – O. Lixa Filgueiras, UMC, EBAP, 1948

Fig. 4 – Team 4, Barredo, ESBAP, 1964-65

Fig. 5 – J. Canto Moniz, Barredo, ESBAP, 1964-65

Porto Fine-Arts School: From Beaux-arts System to Modern Education

Carlos Ramos, professor and dean of the school between 1940-67, proposed a “collective education”, based in Vitruvio and Gropius, which should:

- Relate artistic and technical skills with a critical and social consciousness;
- Integrate in architectural composition course contents related with construction, urban design, and theoretical issues.

- Create a new curriculum combining artistic, technical and social education;

Carlos Ramos educates a new generation of architects, such as Fernando Távora and Octávio Lixa Filgueiras, whom would re-conceptualize modernist architectural approach.

Távora and Filgueiras, (teaching assistants of Ramos in the 1950s and 1960s), assume central roles in both national and international *fora* of architectural debate: ODAM, CIAM and the *Survey on Portuguese Regional Architecture Portuguese*. They argue in favor of a social approach to architectural education, where:

- Analytical methods should integrate design process to understand reality;
- The architect's social function should be enhanced (Filgueiras, 1962);
- The space's organization should be the core of the architect's concern (Távora, 1962).

Porto Arts School is a conflation of Alberti's humanism and Gropius' modernism.

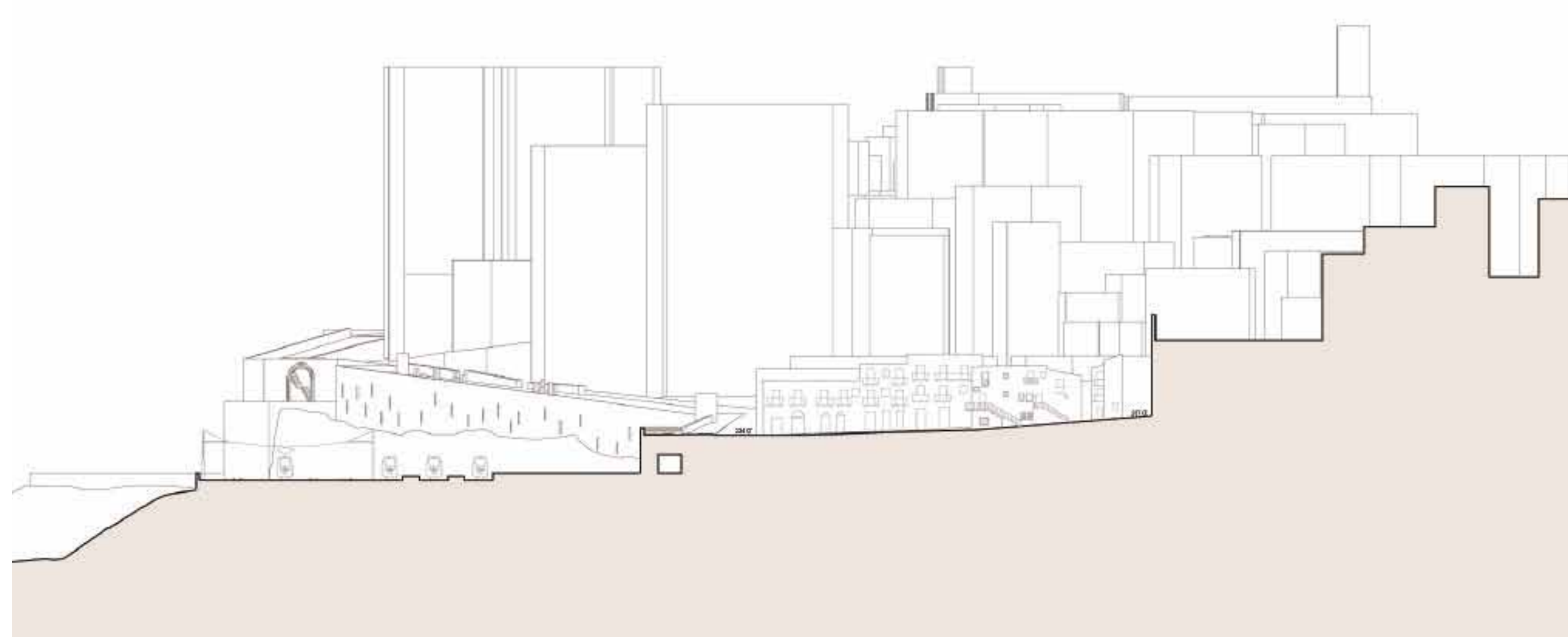
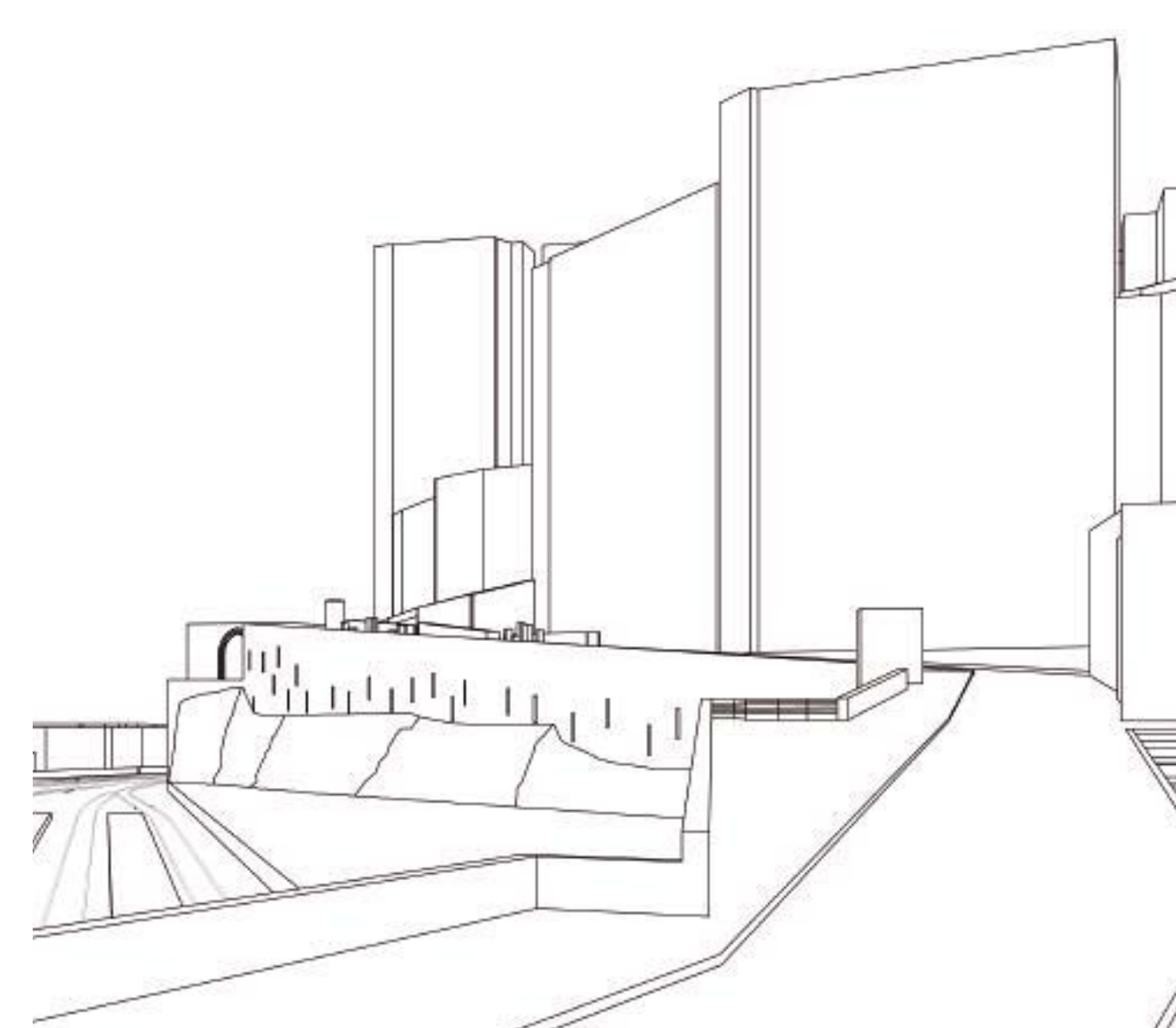
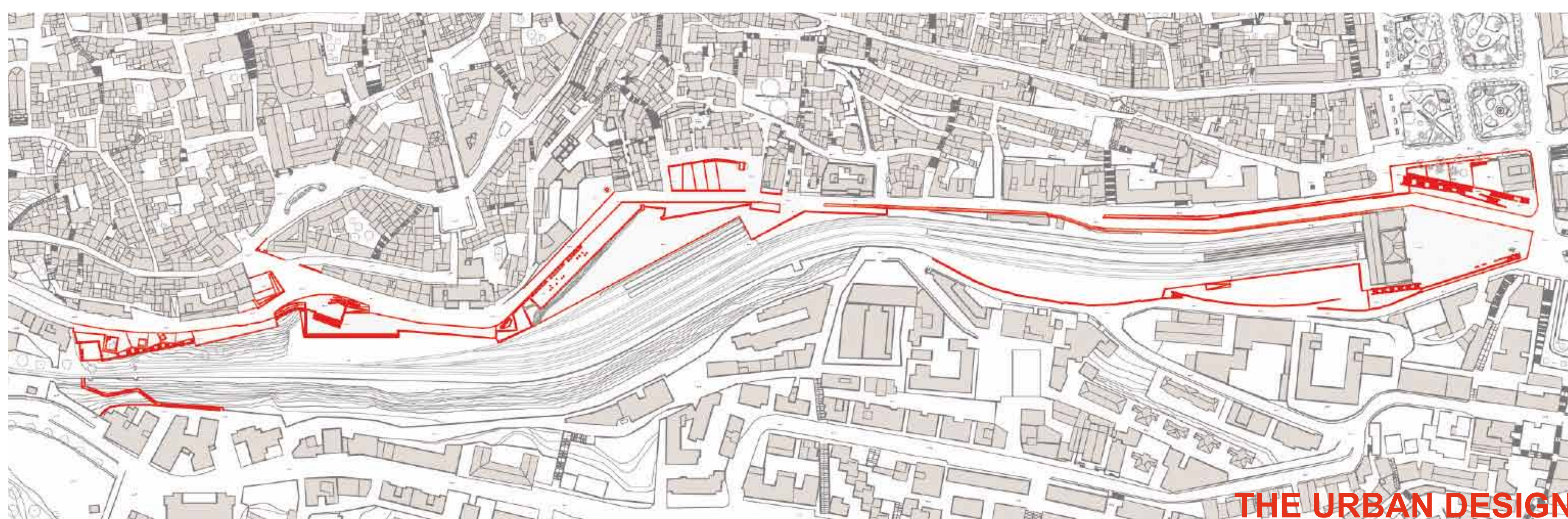
Note:

This work is part of the project “Digital Alberti” funded by FCT, COMPETE/FEDER, Portugal, and hosted by CES-UC (PTDC/AUR-AQI/108274/2008). The project is coordinated by Mário Krüger. Nelson Mota (PhD grant SFRH/BD/60298/2009) and Gonçalo Canto Moniz are researchers in the project.

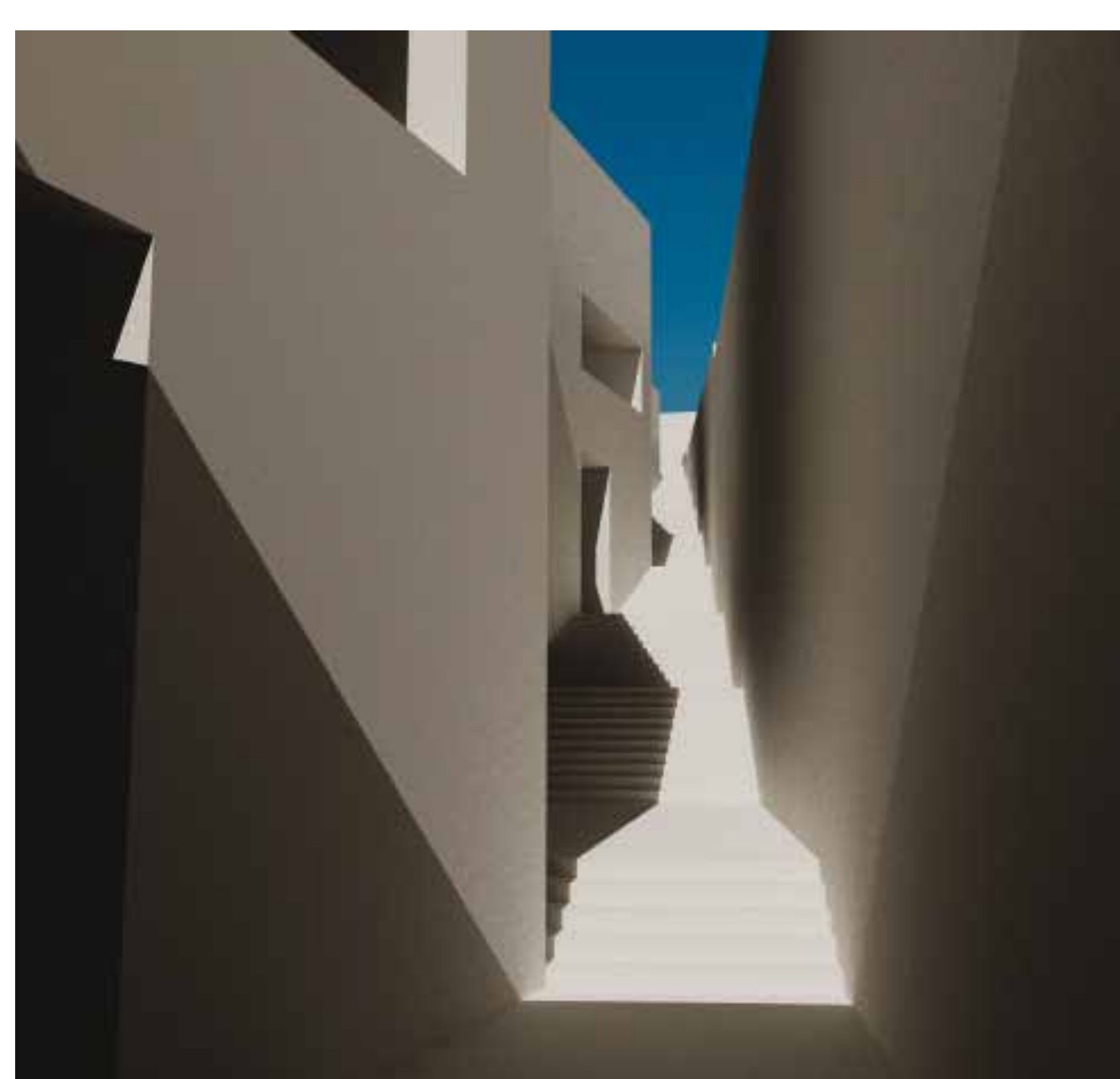


THE ARCHITECTURE OF THE LIMIT.

The recovery of the southern Agrigento's historical walls.



The fourteenth-century Agrigento's walls was interested by strong interventions during last century that led to the present image. In this critical place there are no project, no order, no logic, everything is left to chance. The ambitious target of the project was to give an order to this self caused chaos, to this route that should show the lost historical memory. The project aimed to reshape the urban area through *zero-volume* interventions and to make manifest the peculiarities of this territory trough small gestures, creating sequences of recognizable places that are able to express sense and identity of the urban space. The most significant intervention is designed for a doubling of the road made by a viaduct built in the '80s: we decided to use the space below the viaduct transforming it into a building, in which will host the new location for the Research Centre for the Fiction and the Cinema.





Tema 7
Education in Architecture

Maria Del C. Vera - Colleen O' Malley
Southern Illinois University, U.S.A.

Outsourcing Education: Re-planning the Fabric Between
the American Campus, The City and The Globe

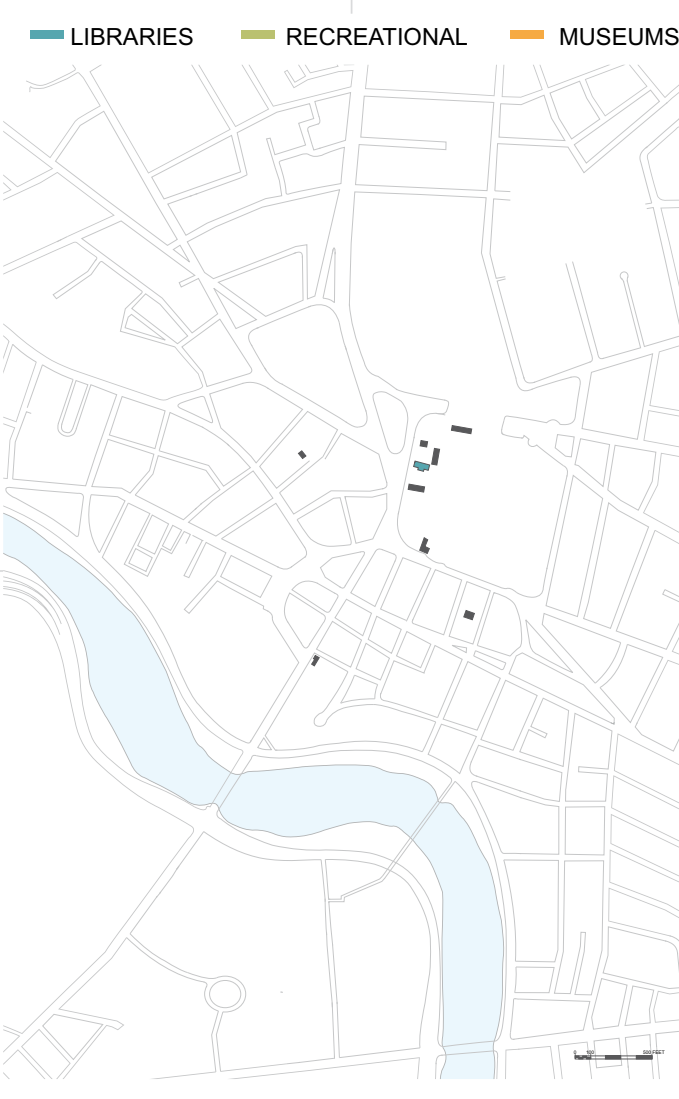
Maria Del C. Vera, Southern Illinois University
Research Assistant: Colleen O'Malley

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HARVARD UNIVERSITY- 1636-1800

1



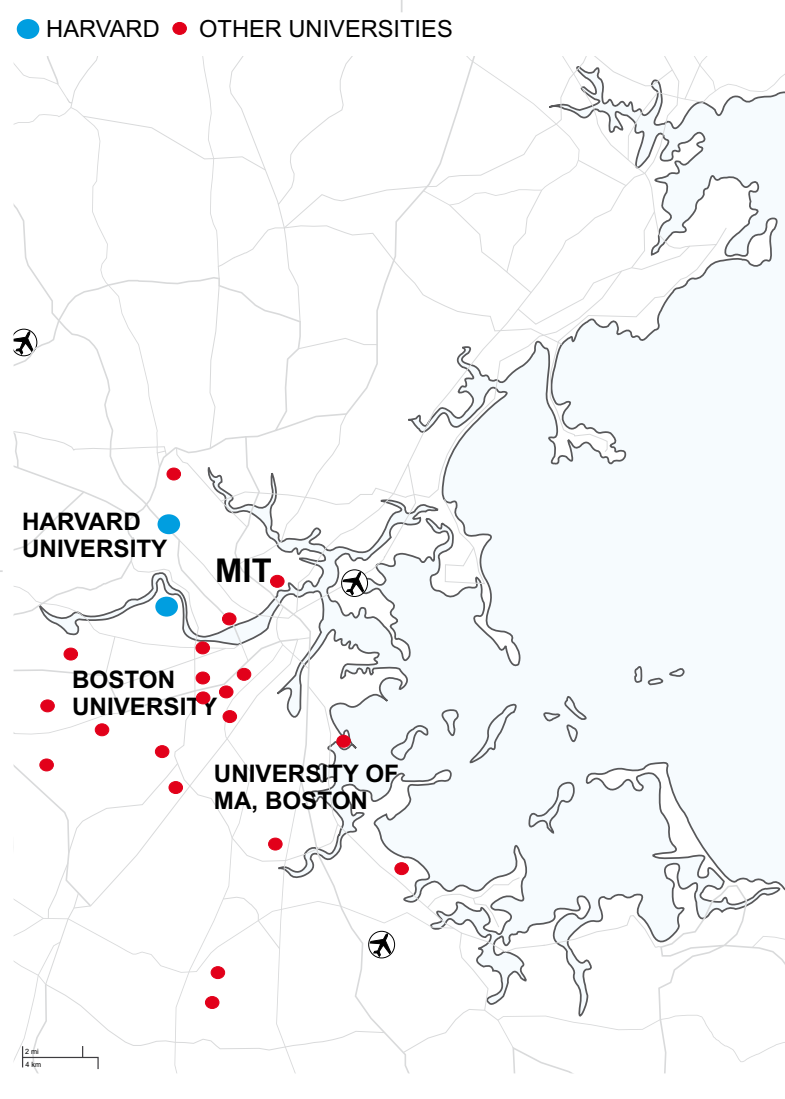
HARVARD UNIVERSITY- 1800-1900

2



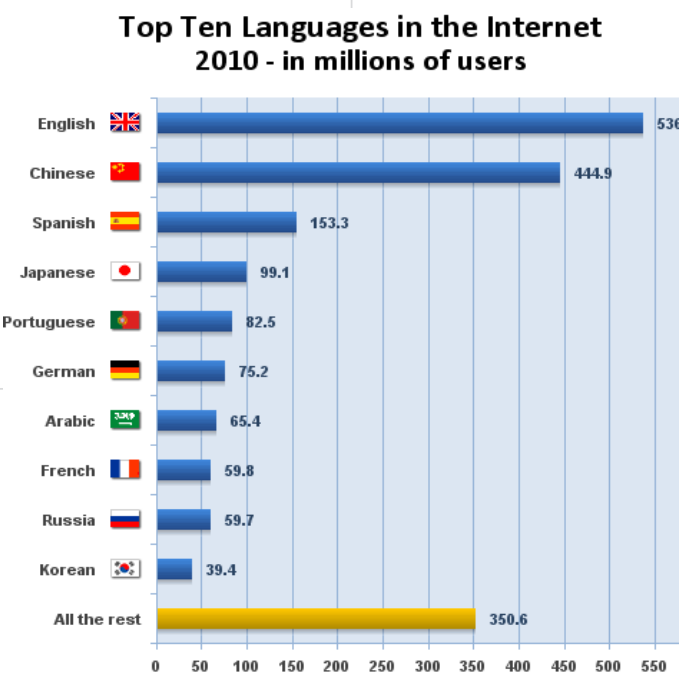
HARVARD UNIVERSITY- 1900-2000

3



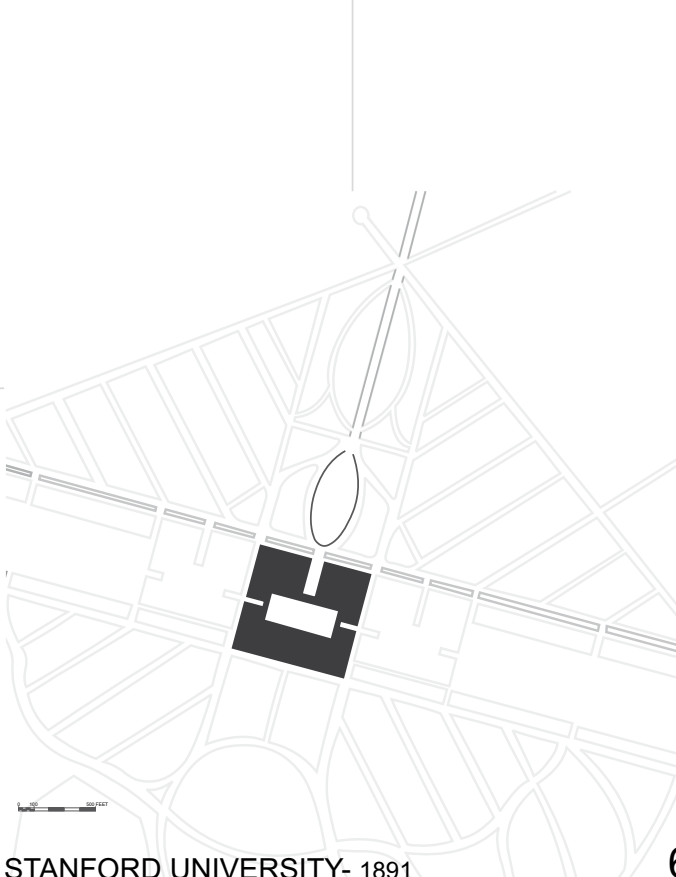
CAMBRIDGE, BOSTON MASSACHUSETTS

4



Source: Internet World Stats - www.internetworldstats.com/stats7.htm
Estimated internet users are 1,996,514,818 on June 30, 2010
Copyright © 2000 - 2010, Minnswat Marketing Group

5



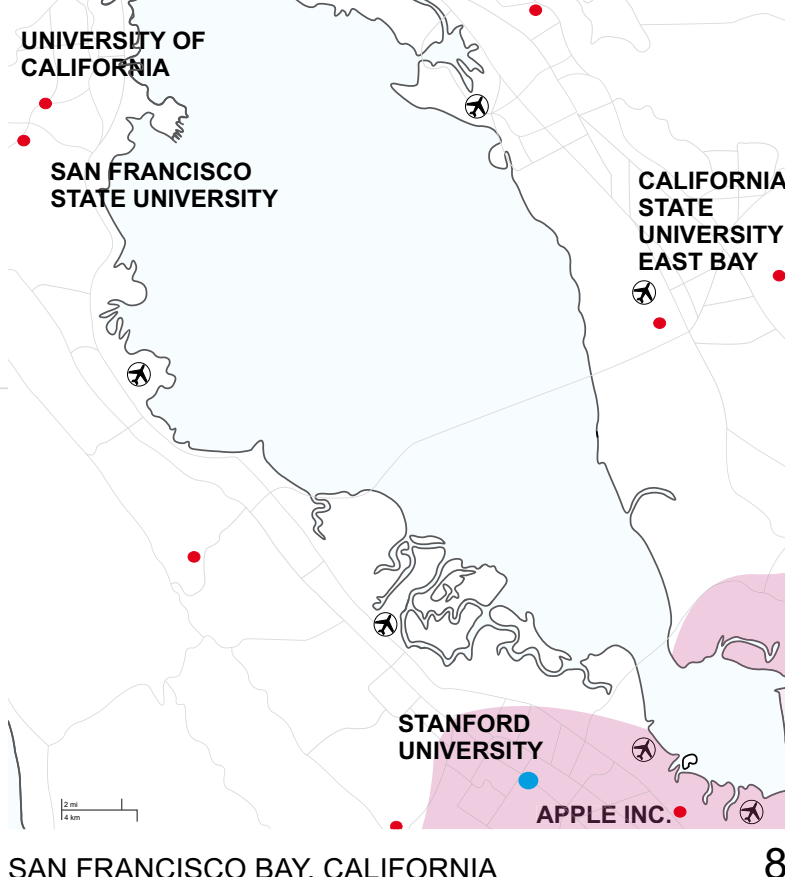
STANFORD UNIVERSITY- 1891

6



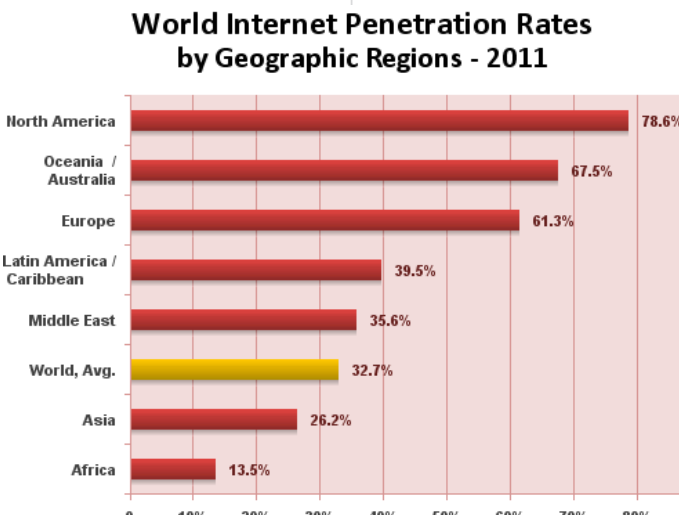
STANFORD UNIVERSITY- 1900-1991

7



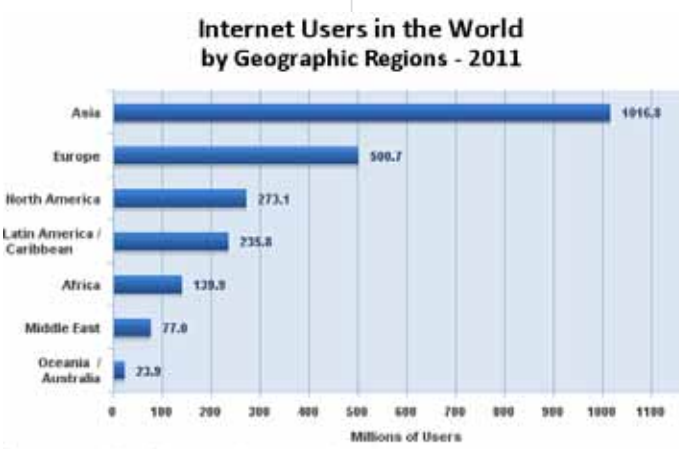
SAN FRANCISCO BAY, CALIFORNIA

8



Source: Internet World Stats - www.internetworldstats.com/stats.htm
Penetration Rates are based on a world population of 6,930,055,154
and 2,287,232,742 estimated internet users on December 31, 2011
Copyright © 2012, Minnswat Marketing Group

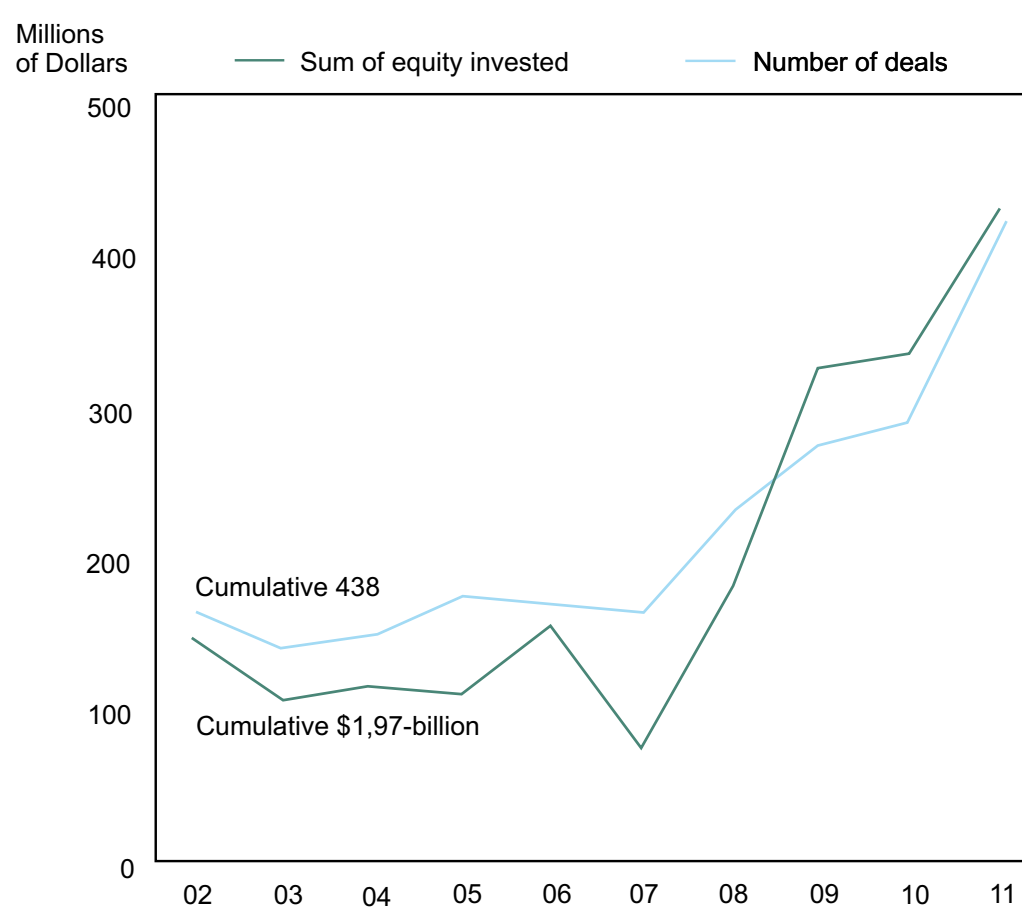
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Source: Internet World Stats - www.internetworldstats.com/stats.htm
Estimated internet users are 2,287,232,742 on December 31, 2011
Copyright © 2012, Minnswat Marketing Group

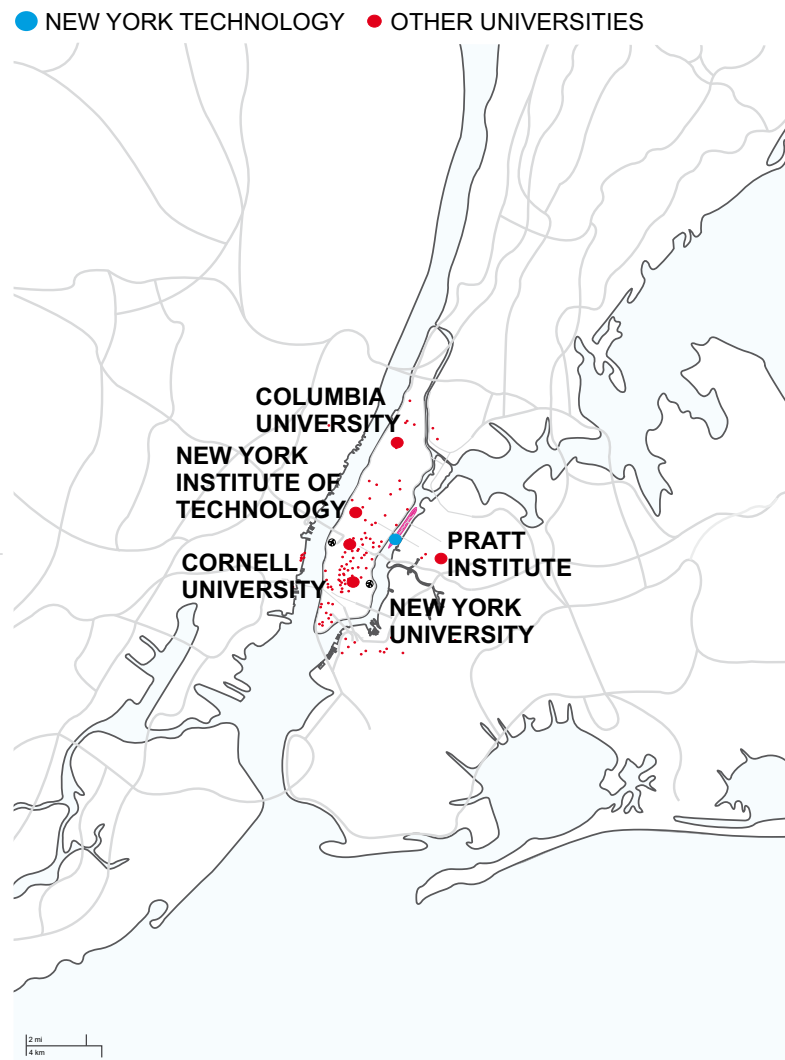
10

Venture-Capital Investment in Education- Technology Companies



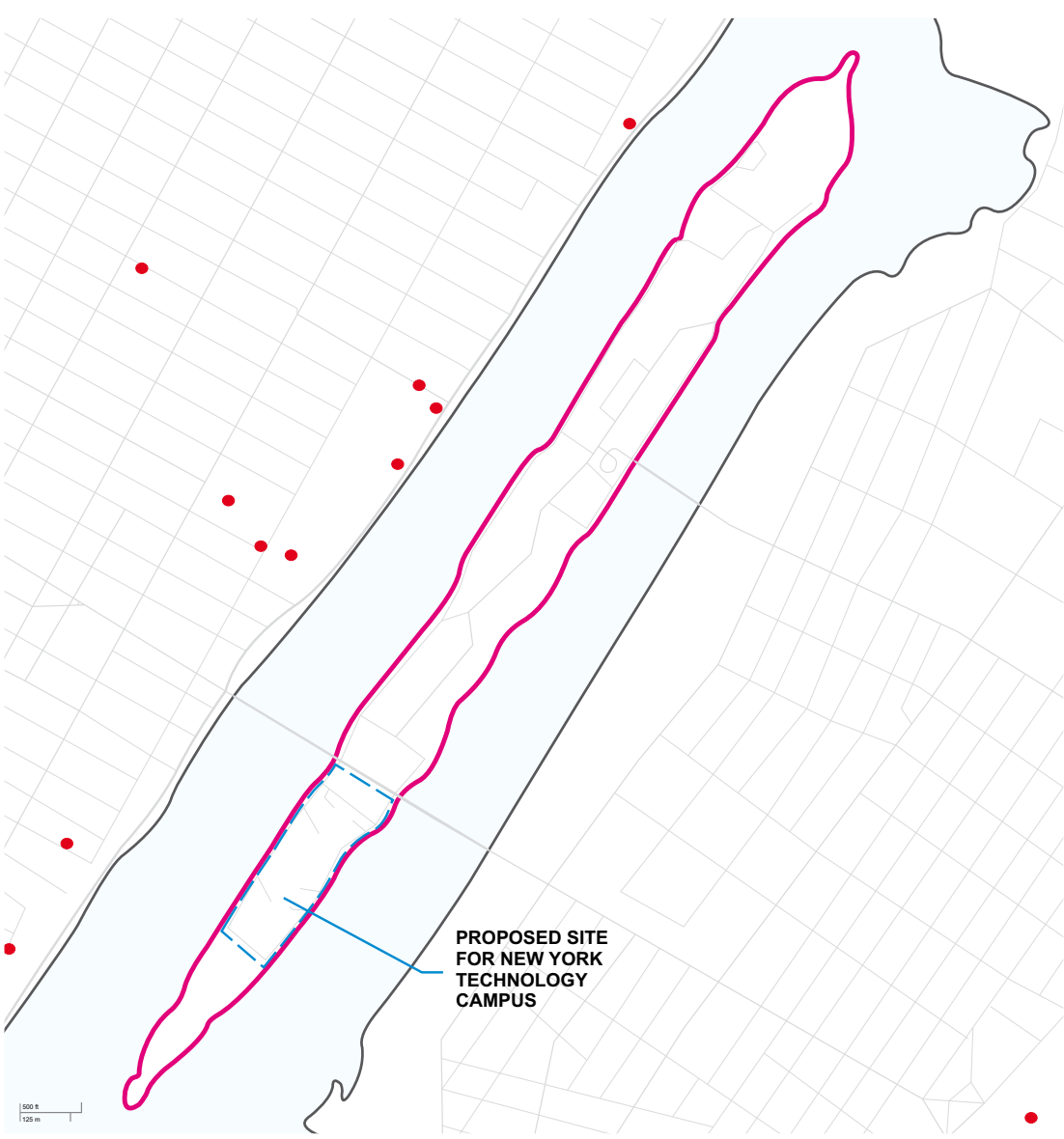
Note: Data includes educational technology companies in elementary and secondary education, higher education, life-long learning, and informal education.
Source: National Venture Capital Association, Thomas Reuters

11



NEW YORK CITY

12

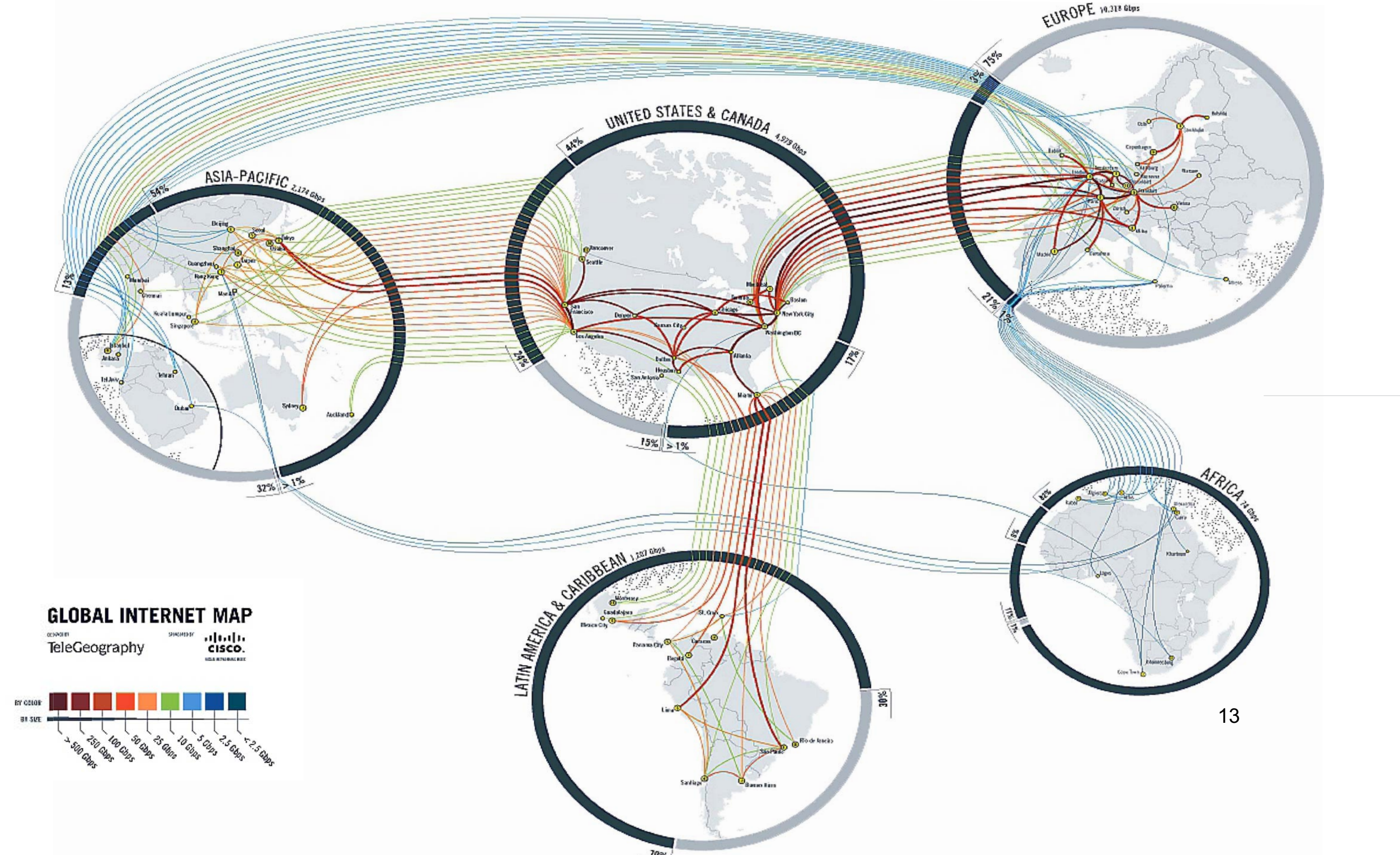


13

Conclusions:
The University in the 21st century is economically driven and portable. The characteristics of an entire City, its urban infrastructure, and thriving regions are becoming the intellectual and spatial campuses of this millennium.

- 1) Cities with established networking systems are optimal university campuses.
- 2) Cornell University and The Technion are both academically strong universities that seized the opportunities offered by Mayor Bloomberg and made the entire New York City area their campus site. *New York City's tech sector is unique. Its information-driven economy is serving as the impetus for the development of many consumer-oriented companies focused specifically on technology to meet end users' needs, including those of NYC's core industries: media, advertising, finance, healthcare, real estate, fashion and design, to name a few. These companies are about technology that is designed in close collaboration with the users of that technology, are strongly connected through deep engagement with those customers, and are motivated to stay and grow right here because of their close ties to the city's tech ecosystem. NYC's tech ecosystem - a collection of companies at different stages of development from very early startups to larger corporations that might be customers or potential acquirers for what those smaller companies are doing - is lacking one thing: more talented people. The pace of developing new companies is getting faster and faster, and the key is getting the right people into an environment where they can focus on and solve today's most relevant technology problems. The NYC Tech Campus will be centered on flexible and dynamic interdisciplinary application hubs instead of traditional academic departments. This model will serve as a focal point for NYC's tech ecosystem, accelerating existing sectors of NYC's economy and driving the formation of new technology businesses through close ties to customers and unique domain knowledge. The first three hubs - Connective Media, Healthier Life and Built Environment - reflect NYC's information economy today and where it's going.*
- 3) As new alliances between cities and universities emerge, new expertise will re-position educational spaces and global networks.
- 4) Communities and resources matter thus; space and networks will be of optimal importance to further the production of knowledge. For this reason, global campuses will continue to accentuate the spatial growth of both the built and virtual spaces.
- 5) The future of education will continue to expand and rely upon the design of complex environments that are inclusive of e-learning and situated within: the comfort of personal spaces, public environments, city escapes, classrooms, scholar communities, industry outlets, cyberspaces and other socially interrelated realms.

Figures:
1-4: Vera/O'Malley
5: Top Ten Internet Languages - World Internet Statistics
6-8: Vera/O'Malley
9-10: World Internet Usage Statistics News and World Population Stats
11: <http://chronicle.com.proxy.lib.siu.edu/article/A-Boom-Time-for-Education/131229/>
12-13: Vera/O'Malley
13: Global Internet Map
References:
1. Vo, Lam. "What America Sells To The World." *Planet Money*. March 2012. What America Sells To The World: Planet Money - NPR. [last accessed March 15, 2012]
2. Campos, Pablo. *The Journey Toward Utopia*. Planning For Higher Education, Winter 2001/2002, Vol. 30 Issue 2, p4-12, 9p.
3. Diamond, David. *MIT Everywhere: Every lecture, every handout, every quiz. All online. For free. Meet the global geeks getting an MIT education, open source-style.*
4. Cornell University. *The Campus*. Cornell in NYC. [last accessed March 15, 2012]

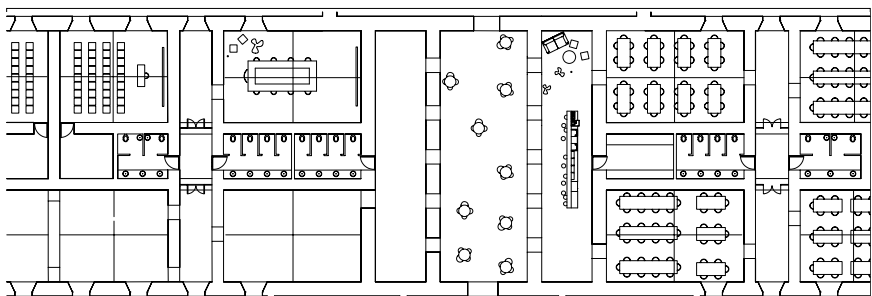


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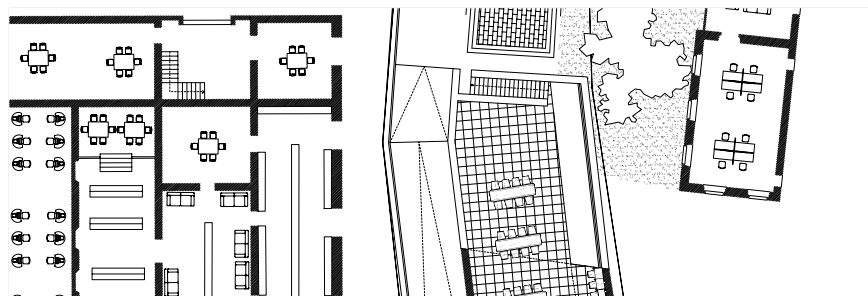


Tema 7
Education in Architecture

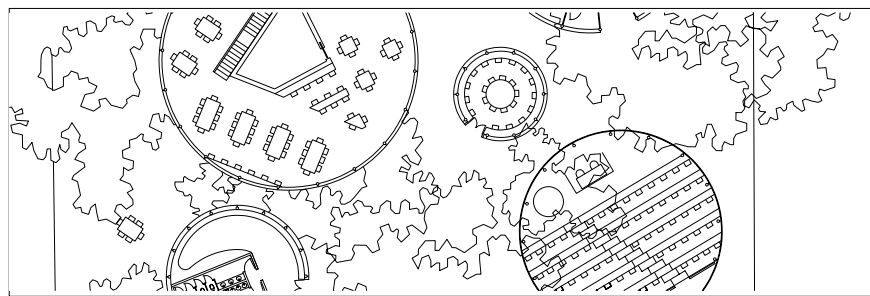
Francesco Zuddas
Università degli Studi di Cagliari, Italy



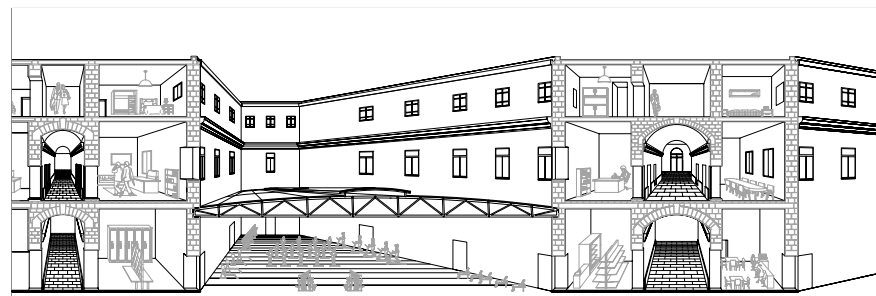
The Space for Learning.
Conversion of former prison in learning centre (3)



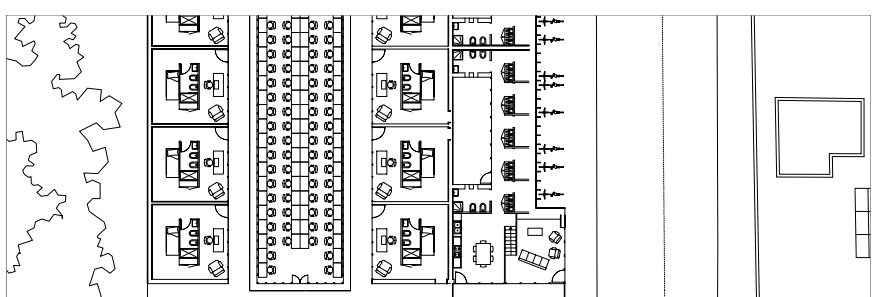
The Space for Learning.
Street as extension of the library (4)



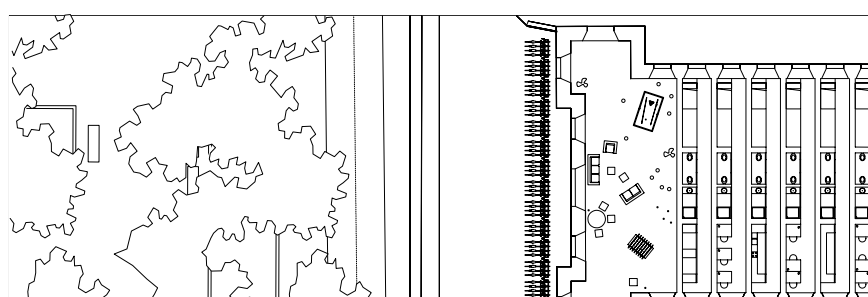
The Classroom.
Differentiated studying opportunities on campus (2)



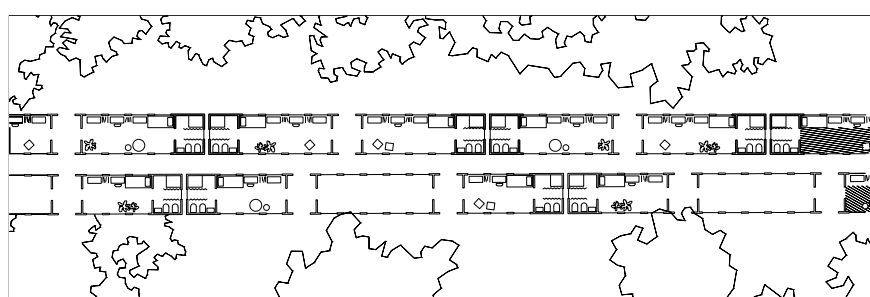
Urban Incubator.
Conversion of hospital in live/work environment (5)



Housing the Students.
New student dormitory outside campus' fence (1)



Housing the Students.
Conversion of former prison in learning centre (3)



Housing the Students.
Rethinking a railway site for an academic community (6)

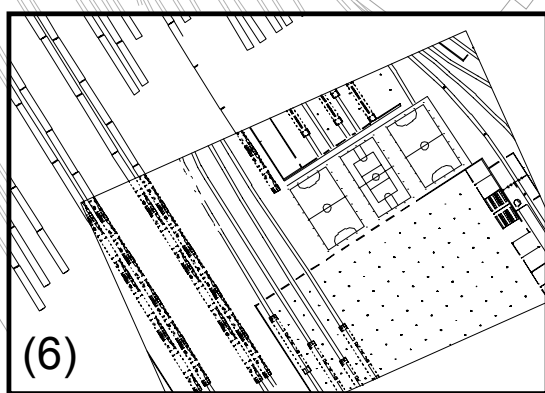


Research, Development and Production.
R&D as urban landscape (7)

The Civic University

Large urban institutions play a major role for the construction of a physical and mental geography of the city. Among them, the University is in primary position. We live in a period of profound rethinking of the University as the institution is increasingly pushed to enlarge its scope of action beyond the traditional missions of teaching and research. This encompasses the need to define an acceptable degree of hybridization with elements belonging to other spheres - business, industry, leisure, commerce, etc. What appears as an opening up necessary to align the University to the challenges of the Knowledge Economy could threaten the consolidated idea of the institution as a detached and inclusive community and of its space as a 'space other' from the city. In the past the translation of such detachment in the form of the outlying campus has been the most extreme and literal manifestation of a need of inclusiveness. Today we assist to a reconsideration of the urban as the proper condition for higher learning and to a related understanding of the urban fabric as its privileged space. While this represents an opportunity for reclaiming a role as beacon for the construction of civicness, the re-insertion within the urban fabric raises the question: how to cope with the simultaneous need of opening up and operative closure?

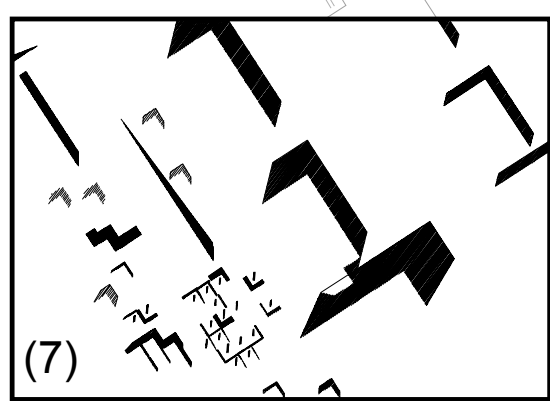
The case of Cagliari (Italy) – 160,000 inhabitants, 33,000 university students – is here presented as test-bed for some design speculations on how to rethink the relation between University and City.



(6)

University of Cagliari: an Urban Geography

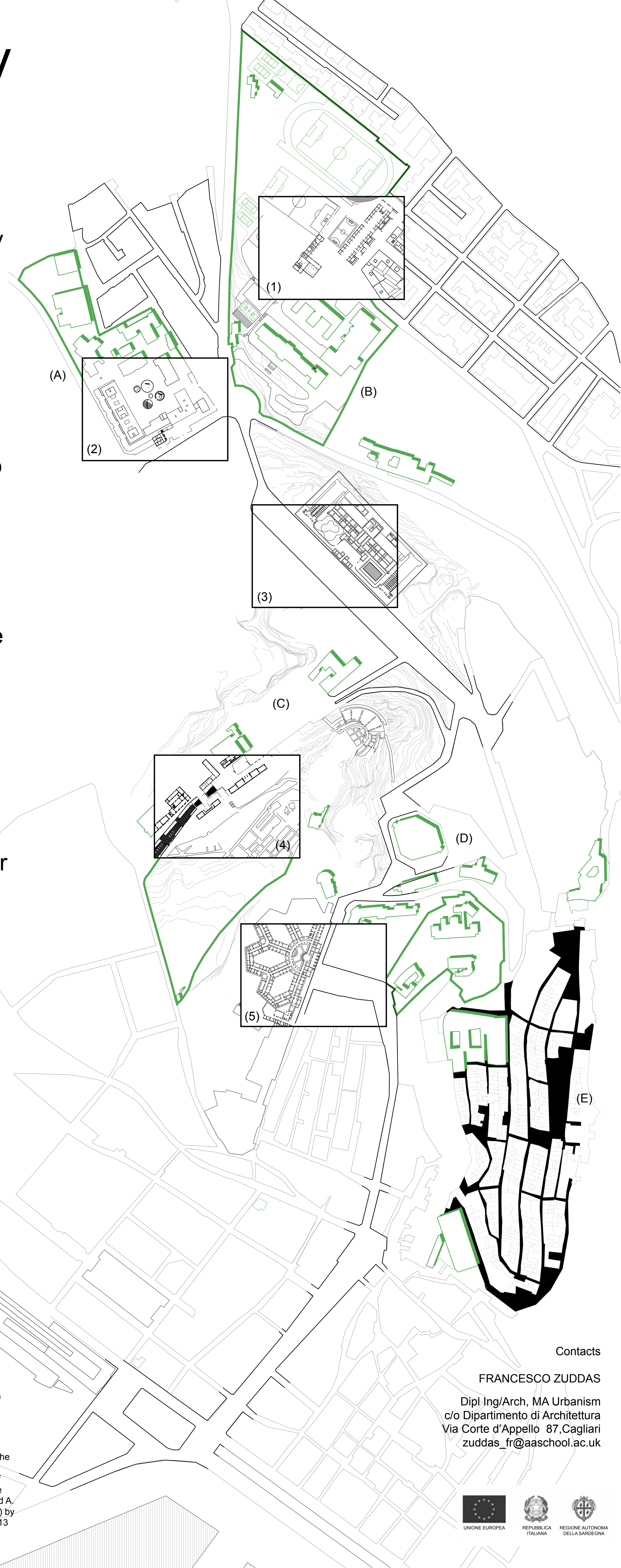
- (A) Engineering
fenced compound - purpose built
- (B) Humanities
fenced compound - purpose built
- (C) Economics/Political Sciences
buildings along street - reuse of former hospices
- (D) Sciences/Architecture/Languages
single buildings/blocks - purpose built + reuse
- (F) Planned diffused student accommodation in historic centre
- (E) Planned new student housing on former railway site



(7)

(F)

Credits: This poster synthesises analysis and design speculations for the urban portion of the University of Cagliari. The relation between City and University is the subject of personal research by the author started at the Architectural Association School of Architecture - Graduate School (London) in 2007 and continued at the School of Architecture of Cagliari (Italy). The projects inside the boxes were developed during design studios co-conducted by the author at the School of Architecture of Cagliari (students: F. Coda, S. Erbi, S. Ferrelli, C. Boni, M. Deidda, S. Giordano, M. Moro and A. Tacconi). This poster is presented as part of the research project "Luoghi per l'Innovazione" (Innovation Environments) by Sabrina Puddu and Francesco Zuddas. (founded by Regione Autonoma della Sardegna, PO Sardegna FSE 2007-2013 sulla L.R.7/2007 "Promozione della ricerca scientifica e dell'innovazione tecnologica in Sardegna").



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c/o Dipartimento di Architettura
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zuddas_fr@aschool.ac.uk





Outsourcing Education: Re-planning the Fabric Between the American Campus, The City and The Globe

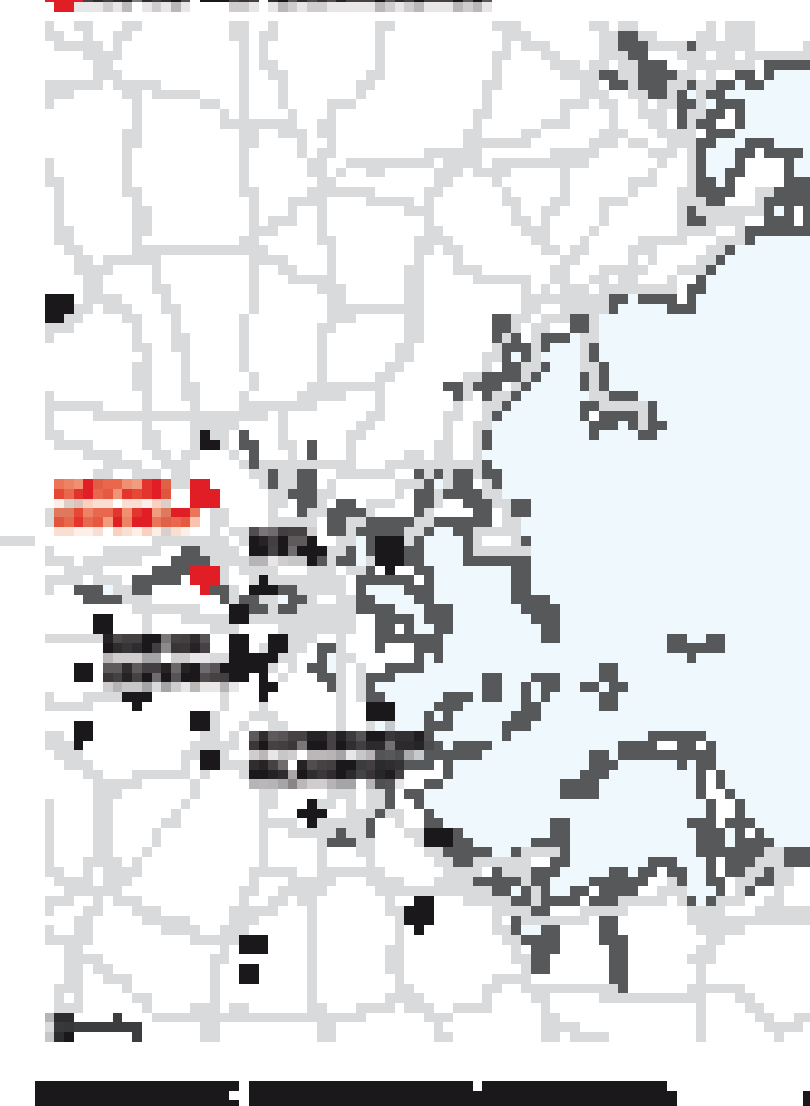
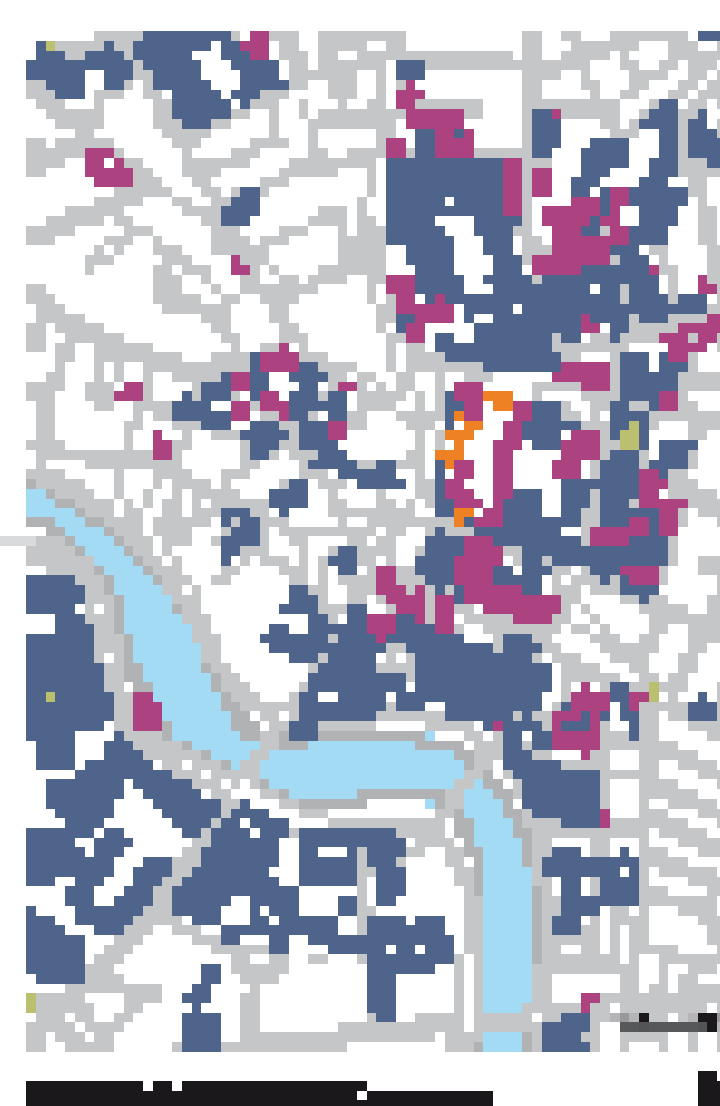
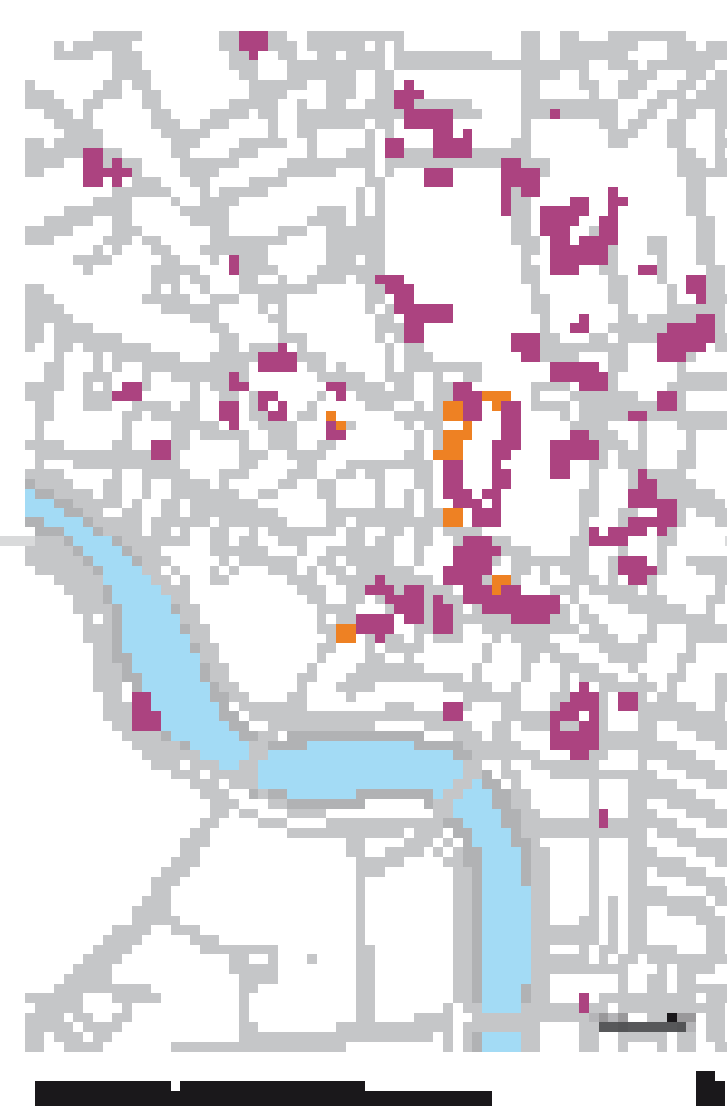
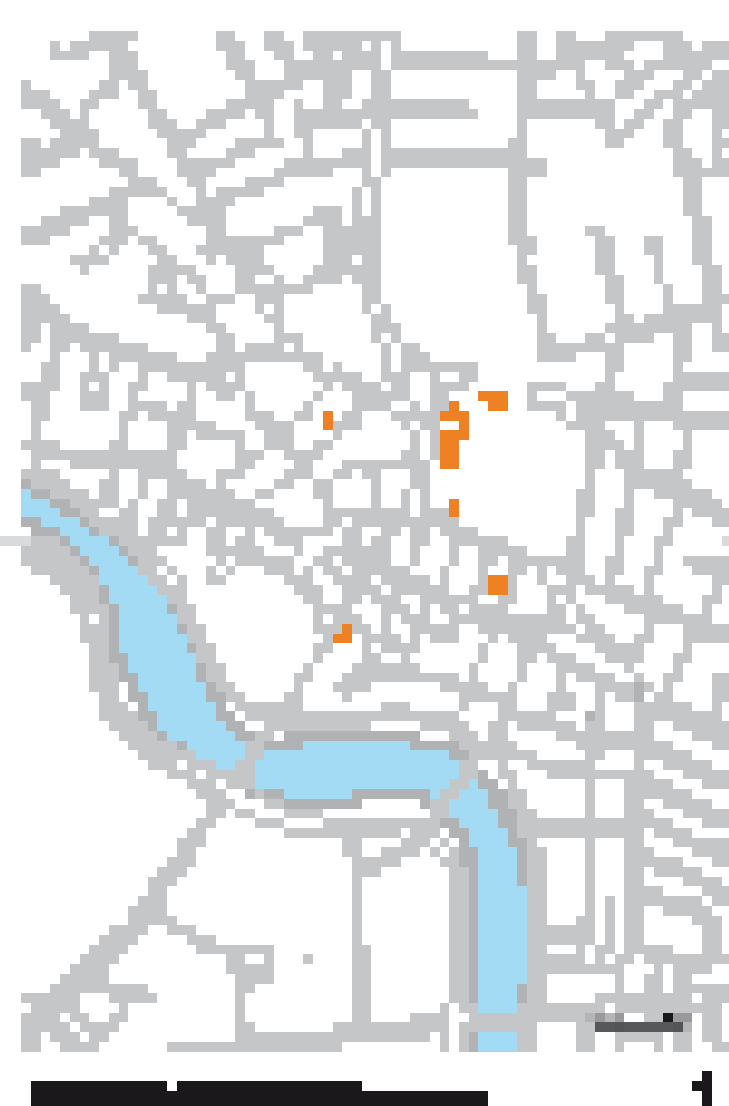
Markus Roth, Ph.D., Southern Illinois University
Research Fellow in Urban Planning

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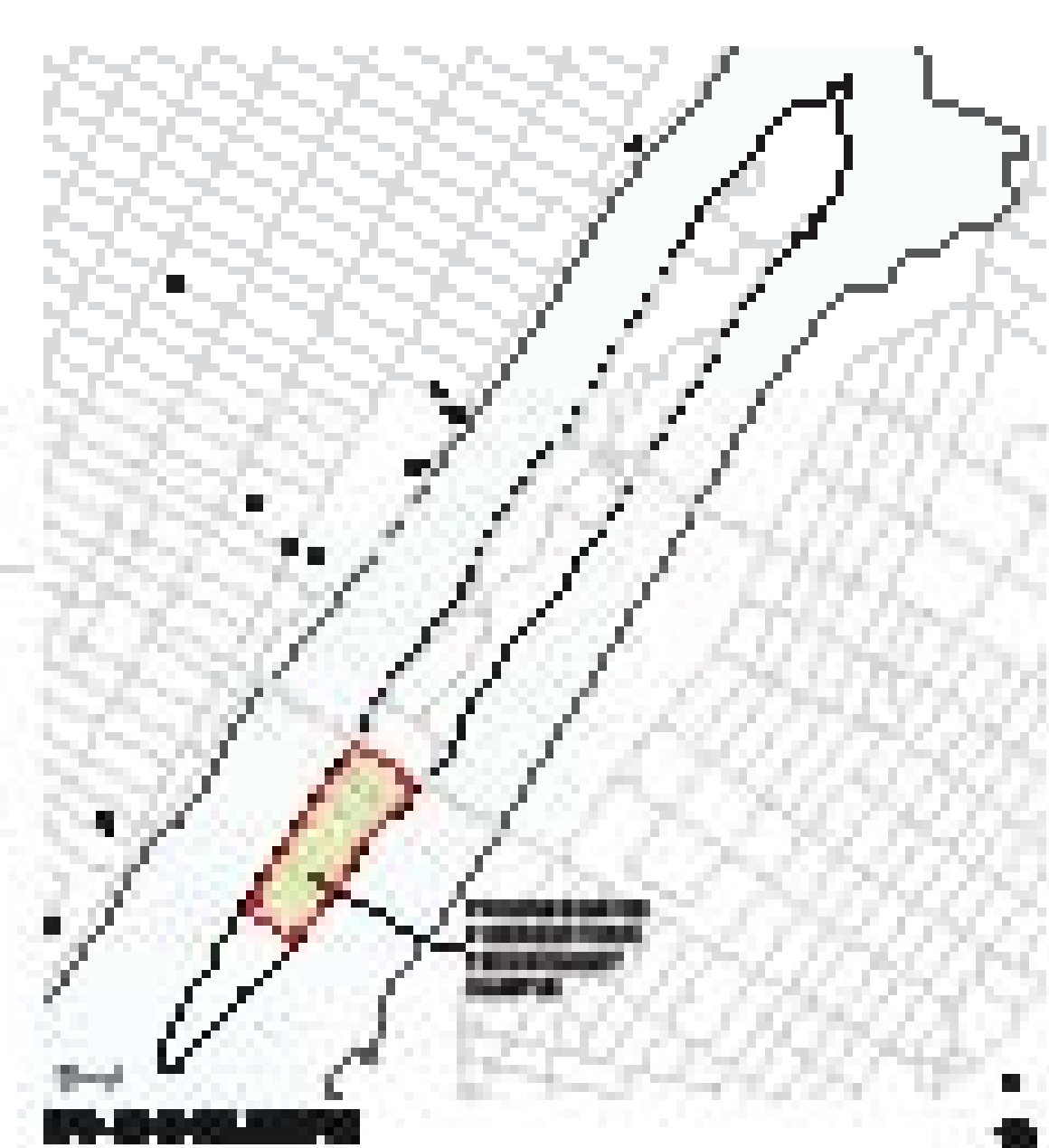
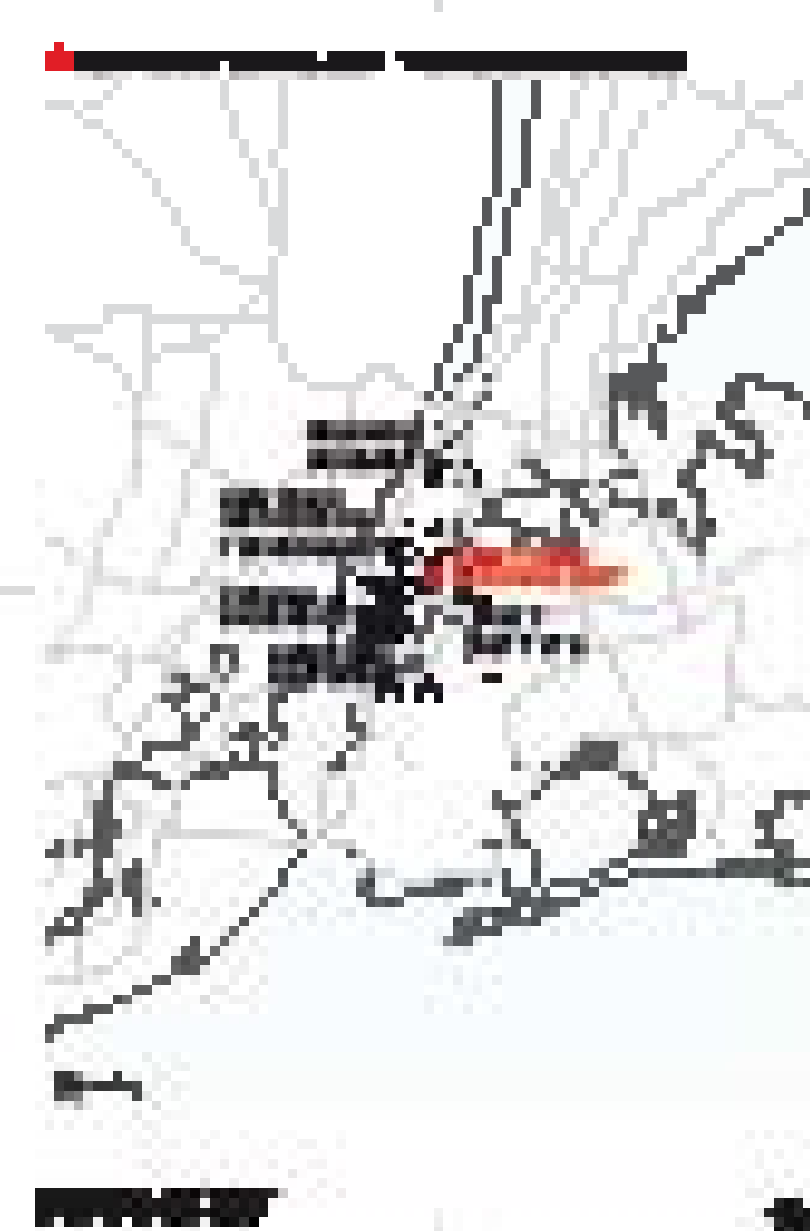
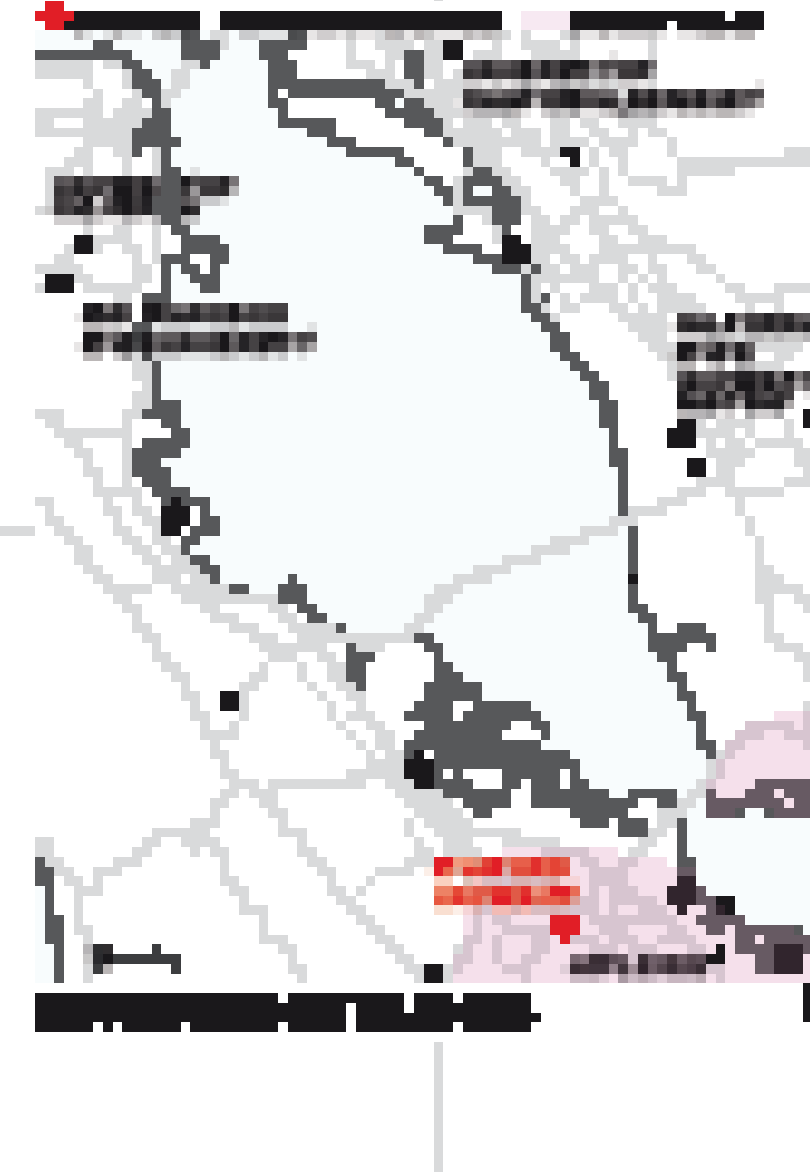
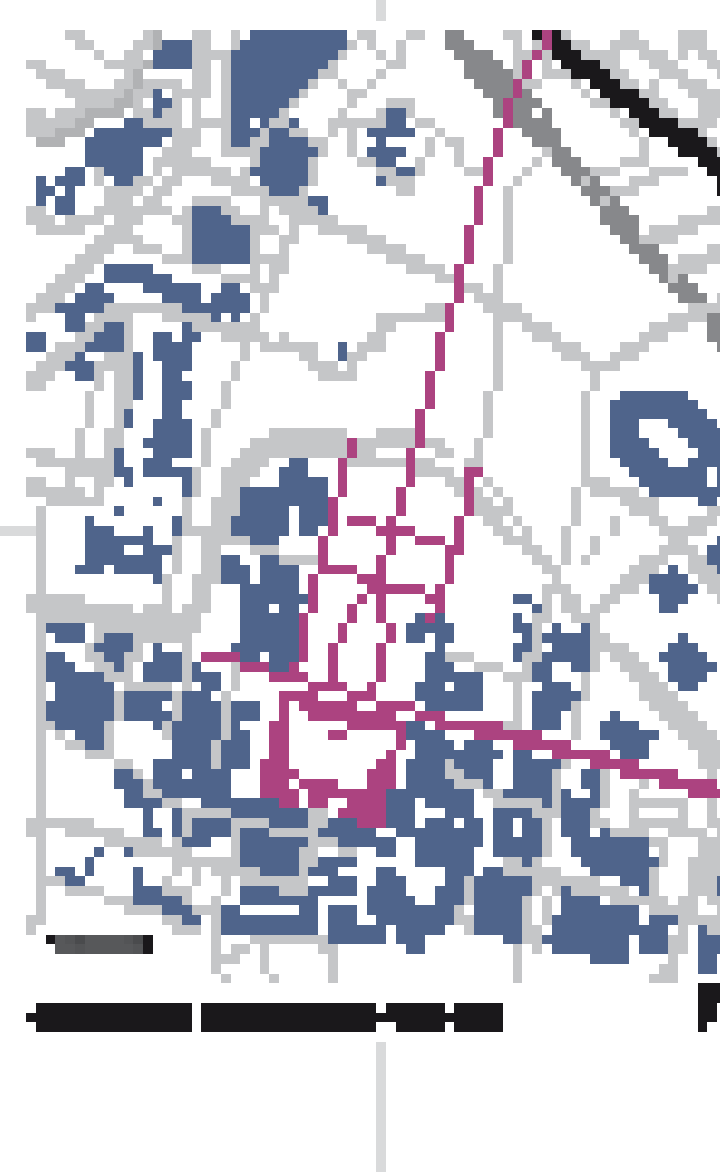
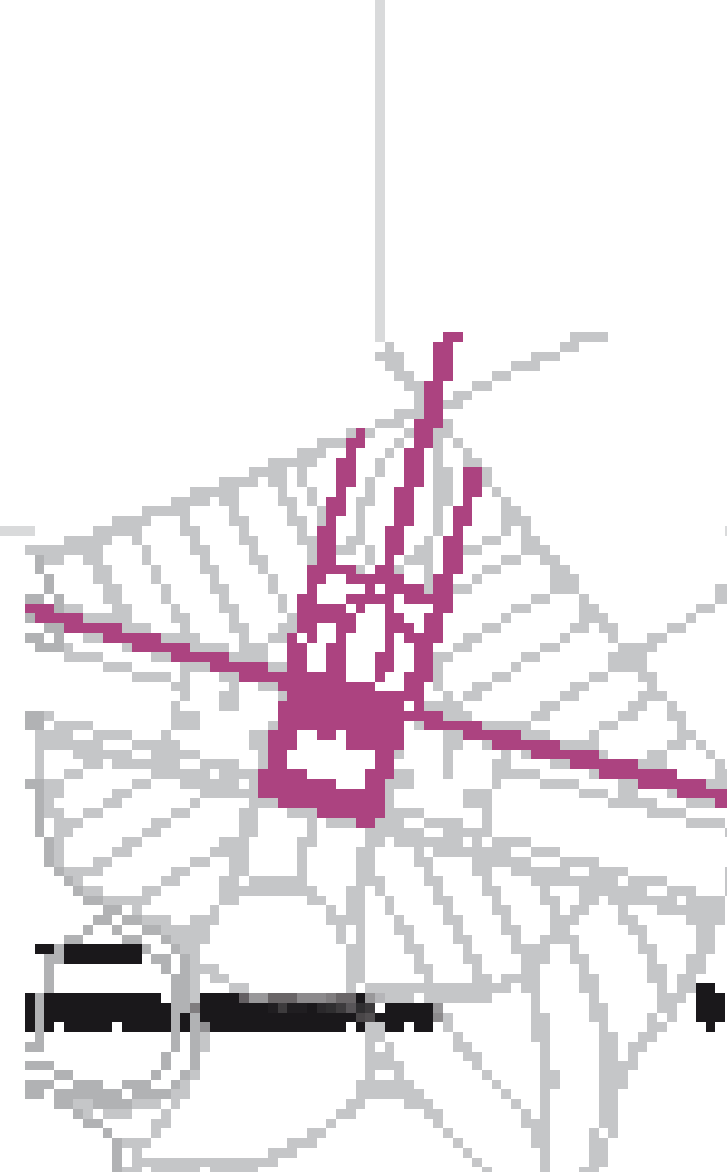
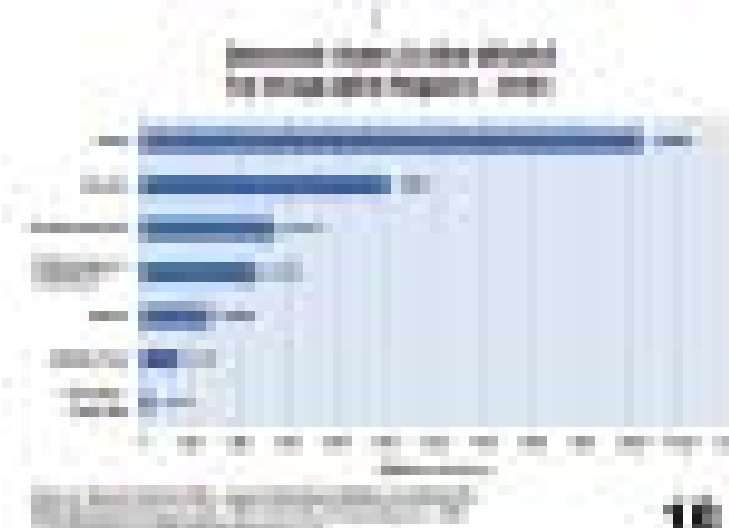
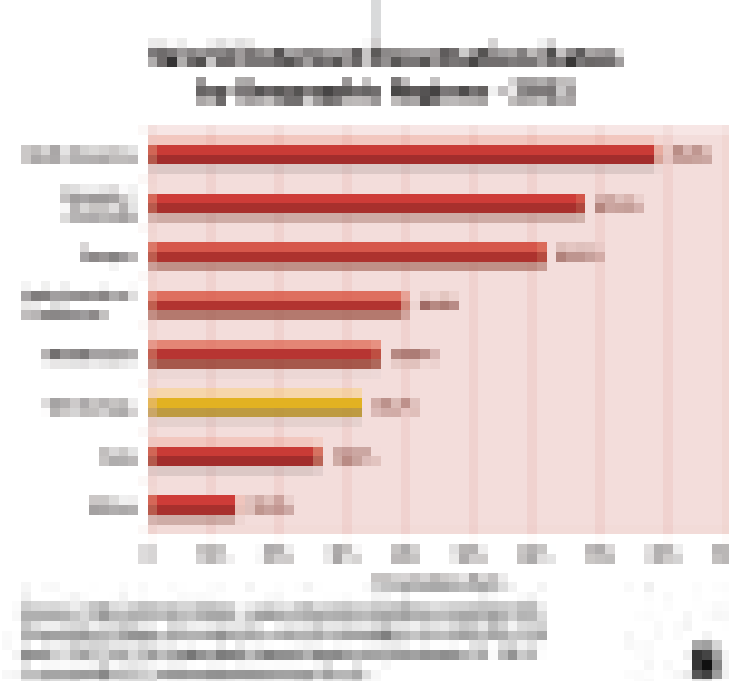
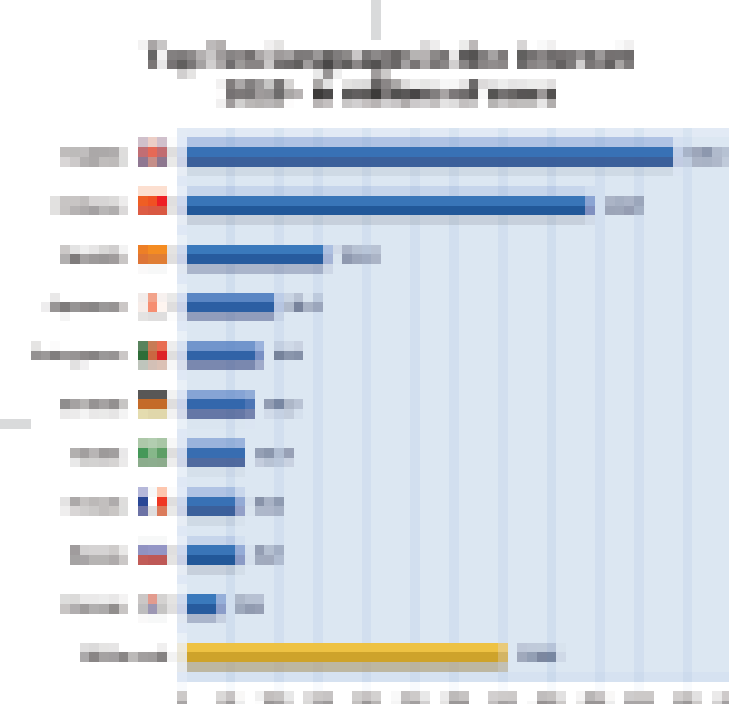
Introduction
The purpose of this research is to explore the historical and contemporary relationship between the American campus, the city, and the globe. The research is based on a historical analysis of the American campus and its relationship to the city and the globe. The research is based on a historical analysis of the American campus and its relationship to the city and the globe.

Methodology
The research is based on a historical analysis of the American campus and its relationship to the city and the globe. The research is based on a historical analysis of the American campus and its relationship to the city and the globe.

Results
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Conclusion
The research is based on a historical analysis of the American campus and its relationship to the city and the globe. The research is based on a historical analysis of the American campus and its relationship to the city and the globe.

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